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CANADIAN INDUSTRY IN 1871

Research Report 12

PATTERNS OF CANADIAN INDUSTRY IN 1871: AN OVERVIEW BASED ON THE FIRST CENSUS OF CANADA

Elizabeth Bloomfield and G.T. Bloomfield

Elizabeth Bloomfield, series editor

September 1990

MILLS & FACTORY OF T.P. WHITE EAST WHITEVALE, PICKERING TP. ONT

UNIVERSITY of GUELPH

Cover Illustration (selected and described by G.T. Bloomfield)

The view of Whitevale, Township of Pickering, was chosen to illustrate Canadian industry in 1871. At this time, a high proportion of manufacturing activity was still located in small settlements, some of which were growing rapidly into towns. **Lovell's Directory** (1871) described Whitevale as:

> A thriving village...[with] extensive flouring and woollen mills... Montreal Telegraph Co has an office here. Distant from Whitby, the county town, and a station of the Grand Trunk Railway, 13 miles. Mail daily. Population about 250.

Truman P. White has acquired the water rights at Majorville on Duffin's Creek in 1845 and developed a grist mill, a saw mill and, later, a woollen mill. By 1871 the census enumerated six significant industrial establishments employing 66 workers and with a total value of production amounting to $125,000. The transition from waterwheels (70 horsepower) to steam engines (66 horsepower) was already apparent in the village by this date. In common with its counterparts across the country, Whitevale's basic industrial activities were closely associated with the local agricultural area. There was also considerable economic integration apparent in the ownership of several establishments by Truman P. White and in the making of staves in the sawmill for the cooper shop which in turn supplied the flour mill with basic containers for transporting the flour to market.

Unlike many of its contemporaries, Whitevale has remained about the same size ever since 1871. The 1971 census recorded a population of only 273 in the unincorporated settlement. Whitevale never achieved connection by railway, county road or provincial highway. Much of the surrounding land was acquired for the planned Pickering airport and new town in 1972/3 and today the settlement is threatened by the creation of a municipal solid waste dump for Metropolitan Toronto and the Durham Region.

The illustration was first published in the **Illustrated Historical Atlas of the County of Ontario** (Toronto: J.H. Bees and Co., 1877), reprinted Ross Cumming, 1972).

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CANADIAN INDUSTRY IN 1871 (CANIND71) PROJECT

Between 1982 and 1990, a project based in the Department of Geography, University of Guelph, has made machine-readable the full data for some 45,000 industrial firms that were enumerated in Canada's first national census in 1871. A uniquely valuable source is thus becoming accessible to scholars and researchers in several disciplines. The 1871 schedules contain a wealth of information which was not published at the time or later. Although similar details were collected in the censuses of 1881, 1891, 1901 and 1911, none of the manuscript schedules for those years have survived. The CANIND71 database has great significance in being a detailed "snapshot" of industrial activity just after Confederation, at a time of transition in industrial technology, business organization and work discipline. The records include examples of all kinds of industrial work environments from mills and artisanal craftshops in mainly rural settings to factories, manufactories and sweatshops in the growing towns and cities.

The CANIND71 project is important for its methodological experience in handling large quantities of historical data and making them accessible to users. Relevant aspects include the total coverage of all establishments and all variables recorded in the original source and our dedication to making the material available to others in a variety of software environments and with full explanation of the source and methodology. As well as the data for each establishment, we have added precise geographical references and Standard Industrial Classification codes (SIC) for all establishments, which permit both the retrieval of details for individual businesses and their systematic aggregation by industry type or geographical area.

Completion of the CANIND71 database has been assisted by several grants from the Social Sciences and Humanities Research Council of Canada between 1985 and 1990. The most substantial of these were Grants 482-87-0010 and 482-88-0010 to Elizabeth Bloomfield as principal investigator, in the Strategic Grants Program: Women and Work Theme. These grants, totalling $114,000, supported the most intensive phase of database creation in 1988 and 1989. Other SSHRC grants to Elizabeth Bloomfield (principal) in 1985 and to Kris Inwood (principal) in 1988 have also helped. In addition, smaller grants from the University of Guelph to Gerald Bloomfield and Kris Inwood have supported the project for short periods. Personal funds have also been necessary. Some preliminary activity on the Maritime data during 1986 was helped by a grant from St Mary's University, Halifax, to Professor Inwood and Professor John Chamard. Systematic reconstruction and digitizing of the boundaries of 1871 census units has been made possible by SSHRC Research Grant 410-89-0099 to Gerald Bloomfield (principal).

The officials responsible for the original 1871 Census of Canada believed that the information they collected and collated was "as accurate as is humanly possible." In our turn, we are devoting twelve months in 1989-1990 to rigorously checking and editing the SAS datasets for Ontario, the Maritimes and Quebec on the mainframe computer. We are also preparing a manual documenting the database in both English and French. We expect that the final version of the whole database will be available for others to use from January 1991. Those interested in obtaining the whole database or partial datasets should contact Dr Elizabeth Bloomfield, C/- Department of Geography, University of Guelph, Guelph, Ontario, N1G 2W1, after September 1990.

CANADIAN INDUSTRY IN 1871 PROJECT (CANIND71) RESEARCH REPORTS

The reports describe the procedures used to make the 1871 manuscript census data for industrial establishments machine-readable as the CANIND71 database and present preliminary analyses and interpretations of selected topics or regions.

1. **Industry in Ontario Urban Centres, 1870: Accessing the Manuscript Census**, Elizabeth Bloomfield, G.T. Bloomfield, Janine Grant and Peter McCaskell (1986).

2. **Water Wheels and Steam Engines: Powered Establishments in Ontario**, G.T. Bloomfield and Elizabeth Bloomfield (1989).

3. **The Ontario Urban System at the Onset of the Industrial Era, 1871**, Elizabeth Bloomfield and G.T. Bloomfield (1989).

4. **Creating CANIND71: Procedures for Making the 1871 Industrial Census Machine-Readable**, Elizabeth Bloomfield and G.T. Bloomfield (1989).

5. **Glossary of Industrial Language**, Jane Turner, Janine Grant and Barbara Sibley (1989).

6. **French-English Dictionary of Industrial Language**, Jane Turner, Janine Grant and Barbara Sibley (1989).

7. **Standard Industrial Classifications Applied to Historical Data: the Case of the 1871 Industrial Census**, G.T. Bloomfield and Elizabeth Bloomfield (1989).

8. **Industrial Leaders: The Largest Manufacturing Firms in Ontario, 1871**, Elizabeth Bloomfield and G.T. Bloomfield (1989).

9. **The Hum of Industry: Millers, Manufacturers and Artisans of Wellington County**, Elizabeth Bloomfield and G.T. Bloomfield (1989).

10. **Boundaries of Canadian Census Units in 1871**, G.T. Bloomfield (1990).

11. **Canadian Women in Workshops, Mills, and Factories: The Evidence of the 1871 Census Manuscripts**, Elizabeth Bloomfield and G.T. Bloomfield (1990).

12. **Patterns of Canadian Industry in 1871: An Overview Based on the First Census of Canada**, Elizabeth Bloomfield and G.T. Bloomfield (1990).

13. **Ontario Central Places in 1871: A Gazetteer Compiled from Contemporary Sources**, G.T. Bloomfield and Elizabeth Bloomfield with Brian Van Nostrand (1990).

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The interest and support of all who have assisted with this project are gratefully acknowledged. Janine Grant, Barbara Sibley, Jane Turner and Stephen Bellinger worked for the project for significant periods and the quality of the final database and documentation owes much to their careful and thorough work. Larry Laliberté has created the computer maps. Peter McCaskell, first as programmer-analyst in the Department of Geography and then from Computing Services, has helped substantially with database management and programming through all phases of the project. We appreciate the shelter provided to this project by the Department of Geography, University of Guelph throughout the 1980s. We are also grateful to the Social Sciences and Humanities Research Council of Canada: Strategic Grants Program and Research Grants Program for its generous financial assistance during 1988, 1989 and 1990 which has enabled us to complete the CANIND71 database.

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John Watson was proprietor of a foundry in Ayr, Waterloo County, Ontario, that made agricultural machinery worth $55,870 in the 12 months before April 1, 1871. The foundry processes were driven by a waterwheel of 30 horse power. Watson reported fixed capital investment of $15,000 and working capital of $45,000 in 1870-1. He paid the 55 men employed in the foundry an average monthly wage of $26.06. The enumerator who recorded the information for Watson's firm was so thorough that we know that 200 tons of pig iron, 1000 tons of bar iron and 100 tons of coal, as well as lumber and hardware, were used in the foundry during the year. We also know that the foundry made 23 threshing machines, 200 reaping and mowing machines, 500 ploughs, 30 grain drills, 40 hay rakes, 30 two-horse cultivators, 50 straw cutters, 50 root cutters, 50 one-horse cultivators, 30 seed drills, 10 field rollers, as well as "miscellaneous castings".

Watson's entry in the 1871 manuscript census schedule is so detailed that we can calculate the unit costs of individual inputs and outputs. For example, Watson reported paying $25 a ton for his pig iron and $10 a ton for his coal. His threshing machines were valued at an average $40, his reaping and mowing machines at $140, his ploughs at $15, his seed drills at $20, and so on. With nearly $40,000 of value added in manufacture, Watson's firm was among the top one per cent of Canadian industrial firms in 1871 in terms of value added. His business ranked 42nd among all Canadian manufacturers of machinery products in 1871, and 18th among those that reported making farm machinery.

In the town of Lévis in Québec, Betsy and Georgiana St Pierre worked together for the full year in a business that was described as a "boutique de modiste" or millinery shop. Their average monthly wage was $12.50. They reported using $1,315 worth of fabrics such as "draps, cassimeres, indiennes, cotonages, soieries", as well as trimmings such as "velours, fleurs, dentelles" to make suits of clothing, women's dresses and bonnets, and other "articles de toilette" valued at a total $1,730. The numbers of suits, dresses and bonnets are stated, but there is not enough other detail for us to calculate unit prices of the fabrics or articles of clothing. The St Pierres' shop was one of over 2,750 industrial establishments in the 1871 census that had female proprietors, over half of them making clothing of various kinds.

Francis Silver operated a cooperage in Lunenburg, Nova Scotia during the 12 months before the 1871 census. He and one other man used pine lumber and 2,500 hoops and staves costing $201 in all to make 700 fish casks, 150 fish barrels and 200 fish boxes valued at $410 altogether. The enumerator noted that these products were "sold on the spot", presumably to local fishermen. Silver's was one of nearly 1,650 cooperage businesses recorded in Canada in 1871, though half of them operated for less than six months of the year. As Silver and his associate reported an average monthly wage of only $8.70, it is possible that they combined the cooperage with other work. Silver's small business was more typical than John Watson's of most other industrial firms operating in Canada in 1871. Seven of every ten cooper's shops reported under $500 worth of output, as did one of every three shoemakers, one of every three cabinet-makers, one of every three sawmills, four of every five shingle-makers,

Figure 1 **CANIND71 SAMPLE RECORD**

proprior: **WATSON JOHN**		*typeest:* **FOUNDRY/AGRC IMPL**	
cdid: **0031**	*ced:* **C-2**	*cdistric:* **WATERLOO SOUTH**	*csd:* **DUMFRIES N**
sic: **311**	*sec:* **5.14**	*month:* **12**	*prop:*
fixcap: **15000**	*flocap:* **45000**	*typepow:* **WATER**	*force:* **30**
empmen: **55**	*empwom:*	*empboy:*	*empgirl:*
totemp: **55**	*wages:* **17200**	*avwage:* **26.06** *per worker/month*	
sumrawc: **16000**	*sumproc:* **55870**	*vadd:* **39870**	

rawmat1: **IRON,PIG**	*runit1:* **TON**	*rquant1:* **200**	*rvalue1:* **5000**
rawmat2: **IRON,BAR**	*runit2:* **TON**	*rquant2:* **1000**	*rvalue2:* **4500**
rawmat3: **COAL**	*runit3:* **TON**	*rquant3:* **100**	*rvalue3:* **1000**
rawmat4: **LUMBER**	*runit4:*	*rquant4:*	*rvalue4:* **1500**
rawmat5: **HARDWARE**	*runit5:*	*rquant5:*	*rvalue5:* **2000**
rawmat6: **MISCELLANOUS**		*rquant6:*	*rvalue7:* **2000**
rawmat7:	*runit7:*	*rquant7:*	*rvalue7:*
rawmat8:	*runit8:*	*rquant8:*	*rvalue8:*
rawmat9:	*runit9:*	*rquant9:*	*rvalue9:*
rawmat10:	*runit10:*	*rquant10:*	*rvalue10:*
rawmat11:	*runit11:*	*rquant11:*	*rvalue11:*
rawmat12:	*runit12:*	*rquant12:*	*rvalue12:*
prod1: **THRESHING MACHINES**		*pquant1:* **23**	*pvalue1:* **920**
prod2: **REAPING,MOWING MACHINES**		*pquant1:* **200**	*pvalue2:* **28000**
prod3: **PLOUGHS**		*pquant3:* **500**	*pvalue3:* **7500**
prod4: **GRAIN DRILLS**		*pquant4:* **30**	*pvalue4:* **2100**
prod5: **HAY RAKES**		*pquant5:* **40**	*pvalue5:* **1400**
prod6: **CULTIVATORS, TWO HORSE**		*pquant6:* **30**	*pvalue7:* **750**
prod7: **STRAW CUTTERS**		*pquant7:* **50**	*pvalue7:* **2000**
prod8: **ROOT CUTTERS**		*pquant8:* **50**	*pvalue8:* **1500**
prod9: **CULTIVATORS, ONE HORSE**		*pquant9:* **50**	*pvalue9:* **500**
prod10: **SEED DRILLS**		*pquant10:* **30**	*pvalue10:* **600**
prod11: **FIELD ROLLERS**		*pquant11:* **10**	*pvalue11:* **320**
prod12: **MISCELLANEOUS CASTINGS**			*pvalue12:* **2000**

comments:

Figure 2 CANIND71 SAMPLE RECORDS

proprior: ST PIERRE B & G typeest: MODISTE, B
cdid: Q153 ced: B cdistric: LEVIS VILLE csd: LAUZON
sic: 242/249-M sec: 5.07 month: 12 type: U
fixcap: 150 flocap: 110 typepow: force:
empmen: empwom: 2 empboy: empgirl:
totemp: 2 wages: 300 avwage: 12.50 per worker/month
sumrawc: 1315 sumproc: 1730 vadd: 415
rawmat1: DRAPS/CASSIMERES runit1: VERGE rquant1: 415 rvalue1:
rawmat2: INDIENNES/COTONAGES/SOIERIES runit2: VERGE rquant2: 1300 rvalue2:
rawmat3: VELOURS/FLEUR/DENTELLES runit3: rquant3: rvalue3:
prod1: HABITS DIVERS punit1: pquant1: 190 pvalue1:
prod2: ROBES DE DAMES punit2: pquant2: 110 pvalue2:
prod3: CHAPEAUX DE DAMES punit3: pquant3: 36 pvalue3:
prod4: AUTRES ARTICLES DE TOILETTE punit4: pquant4: pvalue4:
comments: BETSY & GEORGIANA ST PIERRE

proprior: SILVER FRANCIS typeest: COOPER SHOP
cdid: NS195 ced: F-1 cdistric: LUNENBURG csd: LUNENBURG
sic: 259-C sec: 5.08 month: 12 type: U
fixcap: 200 flocap: typepow: force:
empmen: 2 empwom: empboy: empgirl:
totemp: 2 wages: 209 avwage: 8.71 per worker/month
sumrawc: 201 sumproc: 410 vadd: 209
rawmat1: LUMBER,PINE runit1: rquant1: 6000 rvalue1:
rawmat2: HOOPS/STAVES runit2: rquant2: 2500 rvalue2:
rawmat3: runit3: rquant3: rvalue3:
prod1: CASKS,FISH punit1: pquant1: 700 pvalue1:
prod2: BARRELS,FISH punit2: pquant2: 150 pvalue2:
prod3: BOXES,FISH punit3: pquant3: 200 pvalue3:
comments: SOLD ON THE SPOT

four of every five lime kilns, three of every five potasheries, and two of every five blacksmiths.

The businesses of John Watson, the St Pierres, and Francis Silver represent different kinds of industrial materials and processes in Ontario, Quebec and the Maritime provinces. They are only three of the 45,070 industrial establishments counted in the first Census of Canada in 1871. These vignettes give some idea of the range and quality of the information about Canadian industrial activity that has been made accessible in the CANIND71 database.[1]

The year 1870 has been noted as generally marking the beginning of processes that may be called Canada's "industrial revolution".[2] New surveys of the economic history of nineteenth-century Canada have drawn attention to the diversity of economic activity by this date and have tended to revise an earlier emphasis on the role of "staples", the natural resources traditionally extracted and exported to Europe.[3] But substantive studies of the period around 1870, by economic historians and political economists as well as geographers and historians, have had to depend either on national or provincial total statistics or on rather crude efforts to reconstitute published data for county units which did not correspond to the actual census districts which were defined differently from one census to the next.[4] Some general surveys have been synthesized from references to individual enterprises whose records have survived, but without any means of knowing how representative these firms were of contemporary businesses.[5] Until now, our understanding has been based on generalizations, at the national or provincial level, which cannot convey the richly variegated texture of economic activity from place to place, or on telling vignettes of specific firms out of their context of time and place.

---

[1] All the information reported here has been derived from the 1871 manuscript census of industrial establishments. John Watson's record is #7900 in the CANIND71 database, the St Pierre sisters' record is #41021, and Francis Silver's is #50688. With details of the proprietor's name and location, we may also search for additional evidence in other contemporary sources such as directories and R.G.Dun reference books. For some firms there may also be secondary sources, such as John P. Shewchuk, "John Watson of Ayr" Waterloo Historical Society 74 (1986): 145-157.

[2] Ian Drummond, Progress Without Planning: the Economic History of Ontario from Confederation to the Second World War (Toronto: University of Toronto Press, 1987); Michael B. Katz, Michael J. Doucet and Mark J. Stern, The Social Organization of Industrial Capitalism (Cambridge, MA: Harvard University Press, 1982).

[3] Douglas McCalla and Peter George, "Measurement, Myth and Reality: Reflections on the Economic History of Nineteenth-Century Ontario," Journal of Canadian Studies 21 (1986): 71-86.

[4] G.W. Bertram, "Historical statistics on the growth and structure of manufacturing in Canada, 1870-1937," Papers, Canadian Political Science Association on Statistics (1962-3): 93-151; E.J. Chambers and G.W. Bertram, "Urbanization and manufacturing in central Canada, 1870-1890." In S. Ostry and T.K. Rymes, Papers on regional historical statistics (Toronto: University of Toronto Press, 1966); J.M. Gilmour, Spatial evolution of manufacturing, southern Ontario 1851-1891 (Toronto: University of Toronto, Department of Geography, 1972).

In this report we present a summary of industrial activity in 1871 in order to illustrate the potential of the new CANIND71 database. We are concerned to show how the variables in the database can be used to address several questions about economic activity around 1870. First, we briefly describe the original source and the procedures that were used in making the manuscript schedules machine-readable. Then we survey the dimensions and main characteristics of Canadian industry in 1871 as these are revealed in preliminary analysis of the database. After outlining possible ways of analyzing and interpreting particular variables in the database, we consider particularly the value of the data for studies of the use of inanimate power, the characteristics of the largest firms, the concept of the work environment, and the concentration of industry in urban places. The text is illustrated with several tables and maps; more detailed tables are presented in the Appendix.

With more than 45,000 records, each with up to 125 variables, distributed through more than 1600 Census Sub-Districts, and classified among more than a hundred industry types, the CANIND71 database offers enormous scope for research of many kinds. The analyses and generalizations presented here are the merest beginning to fuller use of the research potential of this new source.

1 INTRODUCTION TO THE CANIND71 DATABASE

The CANIND71 database is a machine-readable version of the original manuscript information for more than 45,000 industrial establishments that were counted in the first Census of Canada in 1871.[6] This new source provides a wealth of information for the four provinces enumerated in 1871 -- New Brunswick, Nova Scotia, Ontario and Quebec. Through analysis of the database we can gain uniquely valuable snapshots of industrial activity just after Confederation, at a time of transition in technology, business organization and work discipline.

The 1871 census was the first to be taken on a consistent basis for the provinces that formed the Dominion of Canada by that date. Although similar information was collected in the Canadian censuses of 1881, 1891, 1901 and

---

[5] Michael Bliss, Northern Enterprise: Five Centuries of Canadian Business (Toronto: McClelland and Stewart, 1987); Ben Forster, "Finding the right size: markets and competition in mid- and late nineteenth-century Ontario," in Roger Hall et al. eds. Patterns of the Past: Interpreting Ontario's History (Toronto and Oxford: Dundurn Press, 1988).

[6] The wealth of detail in this source has become more accessible since the original industrial schedules were microfilmed by the National Archives as part of the whole 1871 manuscript census. T.A. Hillman, Catalogue of Census Returns on Microfilm, 1666-1881 (Ottawa: Public Archives of Canada, 1981).

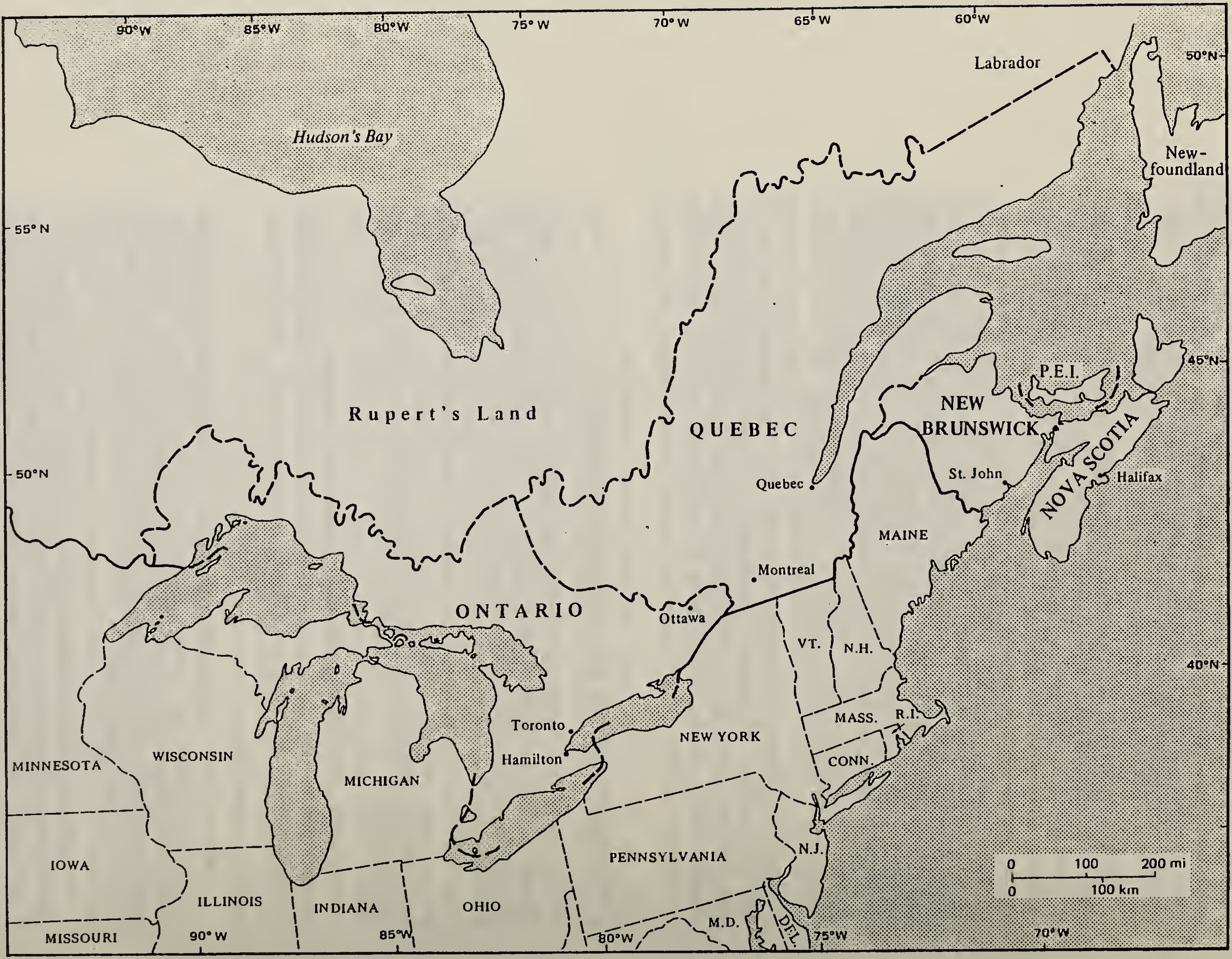

Figure 3: When the First Census was taken in 1871, Canada consisted of the provinces of Ontario, Quebec, New Brunswick, Nova Scotia

1911, the manuscript schedules of industrial establishments for those years have not survived. The 1871 census manuscripts are thus the only systematic source for industrial activity that survives in such detail from the nineteenth century. Moreover, the 1871 schedules contain a great deal of information which was never published at the time.

With 337,000 square miles in 1871, Canada's land area was equivalent to the New England, Middle Atlantic and Mid-West States west to Illinois (Figure 3). Canada's total population of 3,689,257 was a little larger than that of Pennsylvania or New England in 1870; its total value of production of $228 million ranked between Ohio and Illinois. Most of the industrial activity of Canada was concentrated in the core zone from Windsor to Quebec City. Ontario, which accounted for over half Canada's industrial output, was roughly equivalent to Indiana in population, area and value of production. Quebec had about the same population as Michigan and a similar value of output to Maine's. New Brunswick's population was a little less than New Hampshire's and its value of output a little lower than Delaware's. Nova Scotia's population was smaller than Minnesota's and its output was similar to that of Texas or Kansas. Montreal, Canada's largest city and industrial centre, had about the same number of people as Buffalo but was more important in industrial terms. Toronto, only half the size of Montreal, was similar to Rochester in its population and industrial output.

In using the CANIND71 data, we should understand the definitions and procedures used by the 1871 census enumerators:[7]

* Industrial businesses found by the census enumerators as they made their rounds in early April 1871 were included, and details were recorded of their operations during the preceding twelve months.

* An industrial establishment was defined as "a place where one or several people are employed in manufacturing, altering, making up or changing from one shape into another, materials for sale, use or consumption, quite irrespectively of the amount of capital employed or of the products turned out."[8] No minimum value of output was set, in contrast to the United States in the same period, when only establishments with at least $500 worth were included.

* All repairs, mending or custom work were understood to be industrial products. Thus the definition of industrial activity was considerably broader than it would be in the twentieth century.

* Numbers of workers or "employés" were to be the average number of persons actually working in the industrial establishment during the 12-month reporting period, and could consist entirely of members of the proprietor's family. The industrial workforce was subdivided by age and gender into men, women, boys

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[7] For more details, see "Manual Containing the Census Act and Instructions to Officers Employed in the Taking of the First Census of Canada, 1871" in the Canada Sessional Papers No. 64 (1871).

[8] "Manual", p. 138.

(males under 16 years) and girls (females under 16 years), but the amount of wages paid to each age-gender group of worker was not separately stated.

* Industrial establishments were recorded in the geographical units -- District, Sub-District or Division -- in which they were found "and nowhere else. The principle is essential in every case. The production is attached to the locality".[9]

* In reporting custom work such as tailoring or work done on toll such as that of some grist mills or carding mills, enumerators were told to state the real value of raw materials, even if these amounts did not pass through the accounts of the proprietor.

* Though enumerators were invited to specify the types, quantities and values of individual raw materials and products for each establishment, it was foreseen that in most cases only the aggregate dollar values or raw materials and products would be stated.

* Values of fixed capital and floating capital invested in the industrial business were distinguished rather than merged, and the number of working months was specified.

Only a very limited amount of the information collected in Schedule 6 of the 1871 census was published in the official census volumes of the 1870s.[10] The statistical tables that were published at that time were presented by various industrial types that were defined pragmatically rather than systematically, and then listed in alphabetical order. For each industry type, whether as specialized as whip making or as ubiquitous as blacksmithing, figures were published for numbers of establishments, hands employed, yearly wages, value of raw materials and value of products in each of 206 Census Districts.

No industrial data at all were published for smaller areal units such as the Census Sub-Districts, either as summaries of total industrial activity or for specific types of industry. Thus the only 1871 industrial information published for urban centres was for the six cities, the boundaries of which exactly coincided with those of one or more Census Districts. These were Montreal, Toronto, Hamilton, Ottawa, London and Kingston. Some information collected by the enumerators was never compiled into published census tables, notably for types and horse-power units of inanimate power, months of operation during the reporting period, and "floating" capital distinguished from "fixed" capital. Furthermore, the published totals understated the real extent and value of industrial activity as these can now be reconstituted from the manuscript census schedules.[11]

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[9] "Manual", p. 139.

[10] Census of Canada 1871, volume III, Tables 28-55.

[11] For a more detailed discussion of the 1871 Census procedures and a comparison of the published and manuscript data for industry in 1871, see Creating CANIND71: Procedures for Making the 1871 Census Machine-

During the 1980s, the CANIND71 project has made machine-readable the full data for all the industrial firms that were counted in Canada's first national census in 1871. The CANIND71 team entered all records rather than a sample of any kind. For each establishment, there are up to 125 variables. The firms were located in 206 Census Districts and over 1600 Census Sub-Districts in Ontario, Quebec, New Brunswick and Nova Scotia. All details recorded by the enumerators on the manuscript census schedules have been included as basic variables in the CANIND71 database. These are: name of proprietor, kind of industrial business, geographical location, use of non-manual forms of power, numbers of workers (distinguished into men, women, boys and girls), number of working months in the year, and the dollar amounts of fixed and floating capital invested, wages, raw materials and products, as well as kinds, quantities, units of measurement and values of individual raw materials and products, and additional remarks or comments.

In addition, we systematized the codes and names of geographical units and assigned codes based on the 1970 Standard Industrial Classification to all establishments. These geographical and industry codes are essential for analysis of the data by place and industry type and for providing a context for individual firms.[12] Further, the database contains several variables derived by calculation or inference from the basic variables. These include the total values of raw materials or of products (when only details for component products or materials had been stated on the manuscript schedules), the value added (gross value of output less costs of raw materials when both these figures were reported), the total number of employees, and the average monthly wage per employee.

The CANIND71 project methodology was designed to make all this information accessible in systematic, standardized and readily retrievable format. Most important are the dual abilities to retrieve all data for particular enterprises and to aggregate data by any combination of place, at any level of the spatial hierarchy, as well as by industry type or group, and by size criteria (Figure 4). We have planned that the CANIND71 database should support research at all levels, from the particular enterprise in its context of place and industry type to the most generalized abstractions for whole provinces. Numeric data for firms, workers, units of horse power or for values of fixed or floating capital, wages, costs of raw materials, or values of output can be summed for unit areas of any size from a township, parish or village up to a large city, a region, a province or all four provinces.

The manuscript census details and the ways we have encoded them as the CANIND71 database make it possible for the first time to capture and illustrate the spatial variations and interrelationships of industrial activity within Canada

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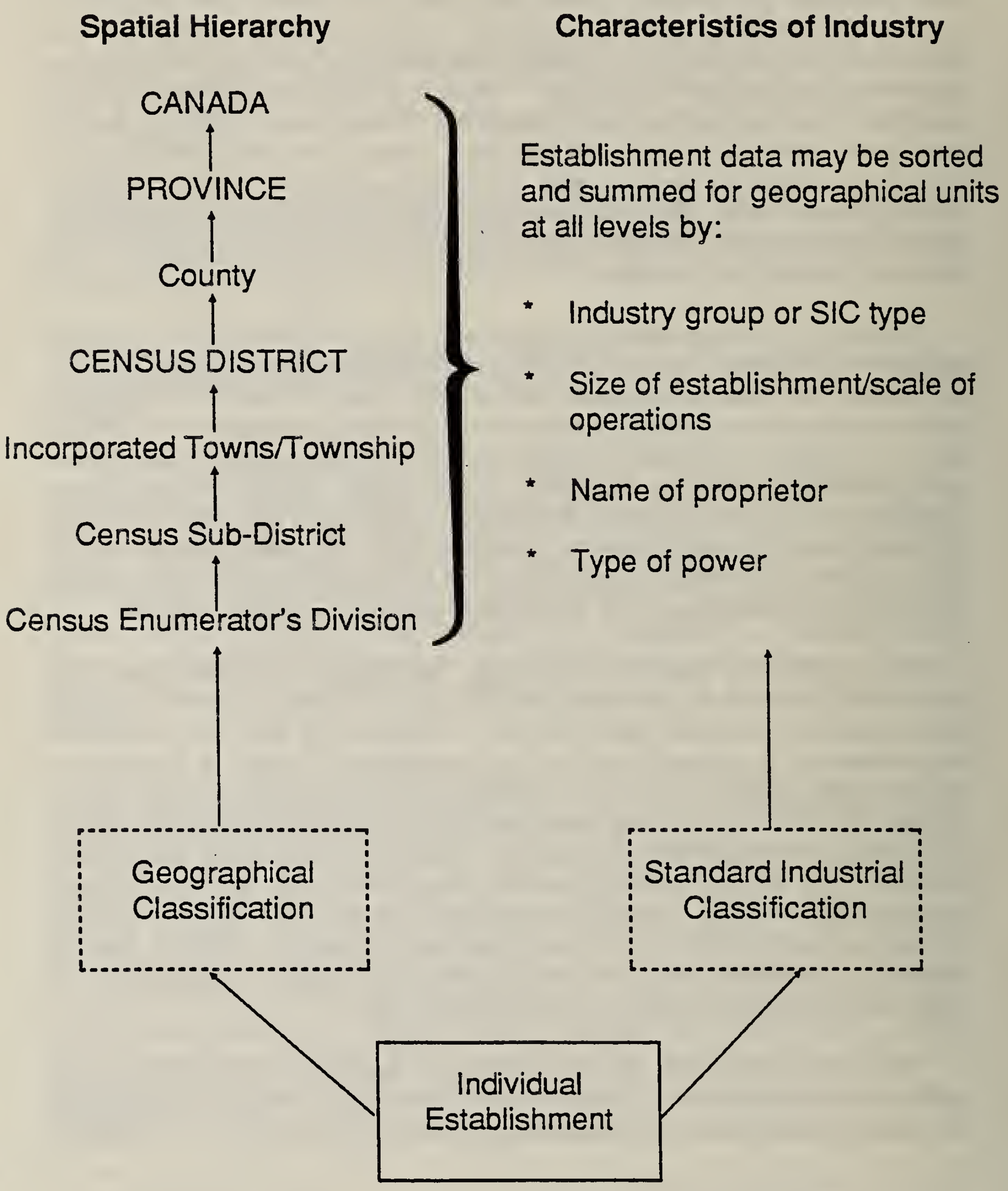
Readable (Research Report #4, 1989).

[12] For a detailed explanation of the industry codes and geographical organization, see Standard Industrial Classifications Applied to Historical Data: the Case of the 1871 Census (Research Report #7), and Boundaries of Canadian Census Units in 1871 (Research Report #10).

Figure 4 **POTENTIAL AGGREGATIONS OF CANIND71 DATA**


Spatial Hierarchy
CANADA
PROVINCE
County
CENSUS DISTRICT
Incorporated Towns/Township
Census Sub-District
Census Enumerator's Division
Characteristics of Industry
Geographical Classification
Standard Industrial Classification
Individual Establishment

Establishment data may be sorted and summed for geographical units at all levels by:

- Industry group or SIC type
- Size of establishment/scale of operations
- Name of proprietor
- Type of power

CAPITAL letters show the only geographical units for which 1871 census data were ***published*** at the time.

at the time of its first national census. Canada's regional differences have long been appreciated by scholars and policy-makers, and contrasts have been drawn between the "core and the periphery", the "corridor", "Main Street", or "heartland" of central Canada and the "hinterland" of regions such as the Maritime provinces that have expressed their sense of alienation from centres of economic and political power.[13] Within central Canada, differences in the level of economic development have been related to the entrepreneurial success and connections of anglophones and francophones as well as to variations in the resource base.[14] The CANIND71 database allows us to document differences from place to place in the nature and factors of industrial activity at an early period, at least for the four provinces that were counted in Canada's first national census. Some of these are illustrated in this report.

2 DIMENSIONS OF INDUSTRIAL ACTIVITY IN CANADA IN 1871

* How many industrial firms were there in 1871? What were the total dimensions of their activities in Canada and the provinces?

Table 1 presents a summary of the main statistics of industrial activity in Canada, with percentages of each variable in the four provinces. When one compares the percentages in each province with that province's share of the total population in 1871, it is clear that industrial activity was unevenly distributed, a point that will be shown more clearly in later tables and maps. In almost all measures, for example, Quebec and especially Ontario had higher proportions of the Canada totals than their shares of total population.

The variations among the provinces suggest that industrial activity was more developed and mattered more in some provinces than in others. Differences between the provinces are evident also in various indices and ratios of industrial activity that may be calculated from the basic data summarized in Table 1. The vast majority of industrial establishments were very small, the average number of workers per establishment being 4.4 across Canada, but this varied from a high for Quebec of 4.8 to a low for Nova Scotia of 3.2. The mean value of fixed capital invested per establishment was $1,947 for Canada, but

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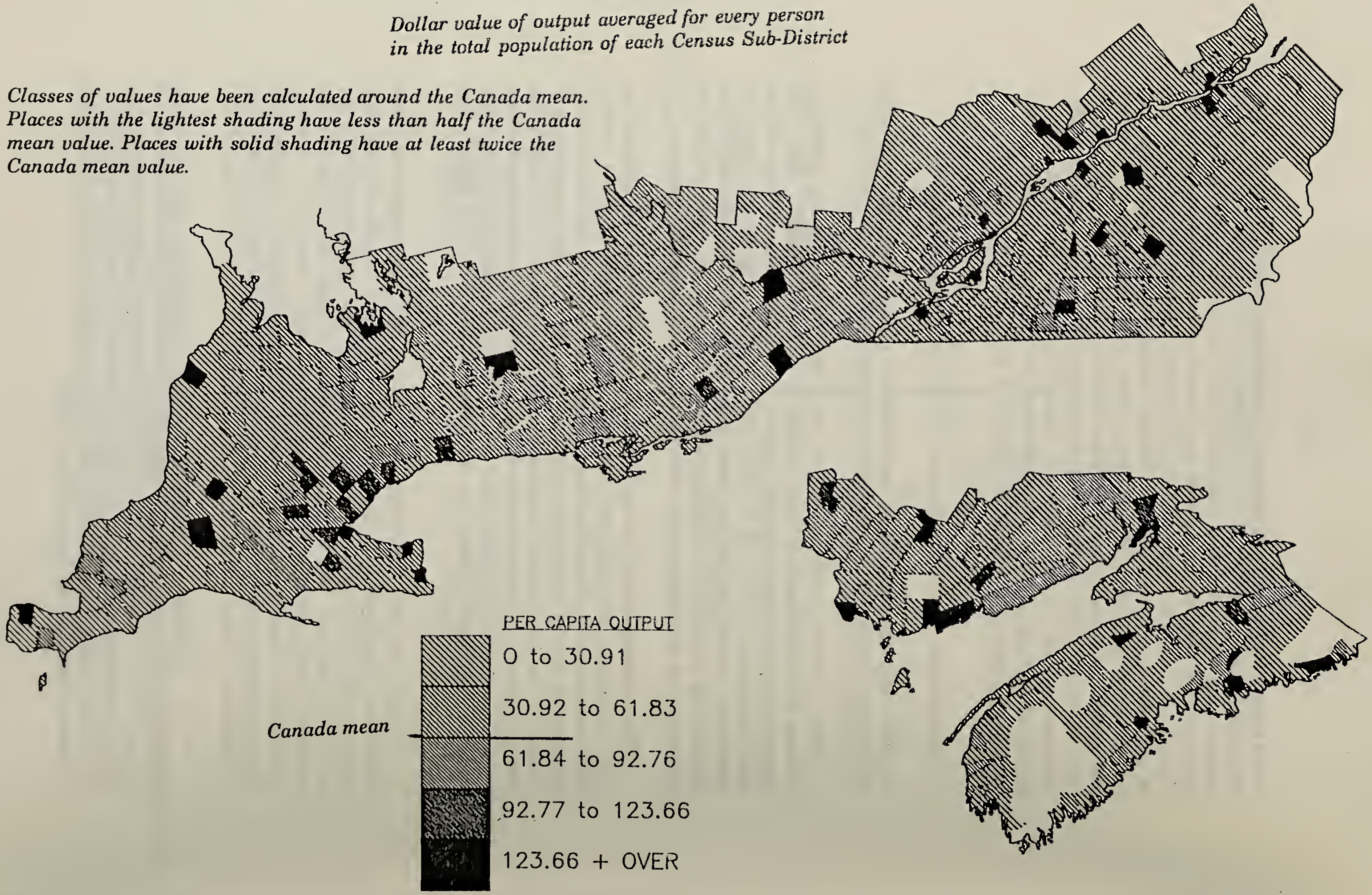
[13] T.W. Acheson, "The National Policy and the Industrialization of the Maritimes," Acadiensis 1, 2 (1972): 3-28; L.D. McCann, "Staples and the New Industrialism: the Growth of Post-Confederation Halifax," Acadiensis 8, 2 (1979): 47-79; L.D. McCann, "The Mercantile-Industrial Transition in the Metal Towns of Pictou County, 1857-1931," Acadiensis 10, 2: (1981): 29-64; C.F.J. Whebell, "Corridors: a Theory of Urban Systems," Annals, Association of American Geographers 59, 1(1969): 1-26; M. Yeates, Main Street: Windsor to Quebec City (Toronto and Ottawa: Macmillan and Ministry of State for Urban Affairs, 1975).

[14] J. McCallum, Unequal Beginnings: Agriculture and Economic Development in Quebec and Ontario until 1870 (Toronto: University of Toronto Press, 1981); J.-C. Robert and P.-A. Linteau, Histoire du Québec contemporain: de la Confêderation a la crise, 1867-1929 (Montréal: Boréal Express, 1979); R. Rudin, Banking en français: the French Banks of Quebec, 1835-1925, (Toronto: University of Toronto Press, 1985).

Figure 5 VALUE OF INDUSTRIAL OUTPUT PER CAPITA

Dollar value of output averaged for every person in the total population of each Census Sub-District

Classes of values have been calculated around the Canada mean. Places with the lightest shading have less than half the Canada mean value. Places with solid shading have at least twice the Canada mean value.



ranged from $1,256 in Nova Scotia to $2,135 for Ontario. The mean value of production per establishment was $5,061 for Canada, but was as high as $5,541 in Quebec and as low as $2,647 in Nova Scotia. Value added per industrial worker averaged $499 for Canada between Ontario's high of $547 and New Brunswick's low of $384.

In most measures, Ontario was highest and Nova Scotia lowest. These measures might also be calculated for smaller areas within the provinces in order to show finer variations from place to place. One index to more local differences in the significance of industrial activity has been mapped in Figure 5, which shows variations in the mean value of industrial production per head of the whole population in each Census Sub-District. In 1871, the mean value for all of Canada was $61.83 worth of industrial output for every man, woman or child. The provincial values of industrial output per capita varied from $73.97 in Ontario, to $67.21 in Quebec, $53.04 in New Brunswick and $33.27 in Nova Scotia. The Census Sub-Districts with the solid shading had at least twice the Canada mean output of $61.83 for every person.

Table 1
Canada: summary of industrial data, 1871 with percentages in each province

	CANADA #	Ontario %	Quebec %	NB %	NS %
Establishments	45,070	48.2	32.1	8.9	10.8
Fixed capital $	87,731,701	52.9	31.6	6.2	7.0
Floating capital $	70,034,255	51.2	38.1	6.7	3.7
Horse power units	220,704	52.4	30.6	8.8	8.2
Men employed	154,432	49.0	33.1	9.0	8.8
Women employed	24,958	48.2	41.9	6.8	3.4
Boys employed	13,722	45.4	36.3	11.3	6.9
Girls employed	4,204	30.6	62.5	3.3	3.6
Wages $	42,261,184	53.4	30.6	8.1	7.9
Raw materials $	127,568,152	52.1	36.7	5.3	4.5
Value of products	228,102,802	52.6	35.1	6.6	5.7
Added value $	98,719,375	52.8	33.5	6.8	6.9
Population	3,689,257	43.9	32.3	7.7	10.5

Source: compiled from CANIND71 database.

*** How many people worked in industrial establishments? How significant was industrial work in 1871?**

Only a minority of the population counted in the 1871 Census was employed in industry. In the CANIND71 database, we capture a total of 154,432 men, 24,888 women, 13,822 boys and 4,764 girls who were reported by proprietors and enumerators as part of "the average number of employés" during the year ended March 31, 1871. Numbers employed in industrial establishments can, of course, be summed for smaller areas and for various industry types.

It is now possible to compare the numbers of industrial workers caught in the CANIND71 database with the 1871 data for occupations. Enumerators were required to ask all household heads to state the occupations of their members. This information survives in manuscript form as part of the nominal or household Schedule 1; it was also published for well over 100 different occupations at the level of the Census District in Table XIII of Volume 2 of the Census of Canada 1871. The tabulating clerks grouped various occupations as agricultural, commercial, domestic, professional and industrial. "Industrial" occupations were not clearly defined in the published census reports, but are deduced to have included the following specific categories: bakers, blacksmiths, bookbinders, box and trunk makers, bricklayers, brickmakers, brewers and distillers, brush and broom makers, builders, cabinet makers, carvers and gilders, carpenters, carriage makers, carders, chemist and druggists, chair makers, confectioners, coopers, dressmakers and milliners, edge tool makers, engineers and machinists, engravers and lithographers, fishing tackle makers, foundrymen, furnace builders, furriers, gas works engineers, goldsmiths and jewellers, hatters, hosiers and glovers, india rubber operatives, iron safe makers, manufacturers, marble workers, mechanics, millers, painters and glaziers, photographers, plasterers, plumbers, potters, printers, quarrymen, saddlers, sawyers, seamstresses, shipbuilders, shoemakers, steam engine builders, stonemasons, tailors, tanners, watchmakers, weavers, wheelwrights, and a category called "various industrial occupations" that were not otherwise specified.

As Table 2 shows, the two kinds of information do not match very well, especially in Nova Scotia and Ontario. The table also presents what percentages those classified in "industrial" occupations formed of the total occupied population in each province.

Table 2
Evidence of the industrial work force, 1871

	CANADA	Ontario	Quebec	NB	NS
CANIND71 database:					
Numbers employed	197,905	95,314	69,475	17,401	15,716
Occupation data:					
Numbers with industrial occupations	212,888	93,871	65,707	18,683	34,547
Total "with definite occupations"	1,009,848	463,424	341,291	86,488	118,645
"Industrial" % total	21.1%	20.4%	19.6%	21.6%	29.1%

Source: first line compiled from CANIND71 database; other three lines calculated from published tables of occupation, Census of Canada 1871, Volume 2, Table XIII.

The discrepancy between the figures for occupations and the equivalent numbers of employees in manufacturing industries was generally noted in the introduction to Volume III of the 1871 Census reports. But the author cited an example only from fisheries and offered as explanation the fact that fewer people regarded themselves as belonging to a "profession" than the average number that actually contributed to that form of economic activity. He pointed out that the seasonality of employment in some sectors meant that "some men following certain occupations are successively engaged in the course of the year in various employments."[15] The reporting of women's occupations was much less complete, as the enumerators assumed that most women did not have a "definite occupation".[16] Thus they often forgot or neglected to ask the household head about the occupations of women.

Table 3
Participation rates in industrial work, 1871
% total population in each gender/age group

	CANADA	**Ontario**	**Quebec**	**NB**	**NS**
Men in all firms	16.3	16.9	16.2	17.6	12.8
Men in 12-month firms	10.3	11.8	10.5	7.0	6.2
Women in all firms	2.6	2.5	3.2	2.2	0.8
Women in 12-month firms	2.0	2.0	2.7	1.3	0.7
Boys in all firms	6.2	5.9	6.7	8.8	4.1
Boys in 12-month firms	3.9	3.9	4.5	3.0	2.2
Girls in all firms	2.2	1.4	4.1	0.9	0.8
Girls in 12-month firms	1.8	1.0	3.7	0.5	0.5

Source: compiled from CANIND71 database and the published tables of age-groups of the population, Census of Canada, 1871, Volume 2, Table VII.

Using the CANIND71 data of industrial employment, we can now calculate more sensitive indices of participation in paid industrial work from place to place. We can relate the numbers of men, women, boys and girls reported as employees in industrial establishments to the demographic data for gender/age groups of the total population in order to calculate participation rates. What percentage of all men over the age of 16, for example, were counted as industrial employees in the CANIND71 database? Table 3 shows the mean participation rates of men, women, boys and girls in each province and Canada as a whole. We can also distinguish between the overall participation rates and adjusted rates based on the returns from those industrial establishments that

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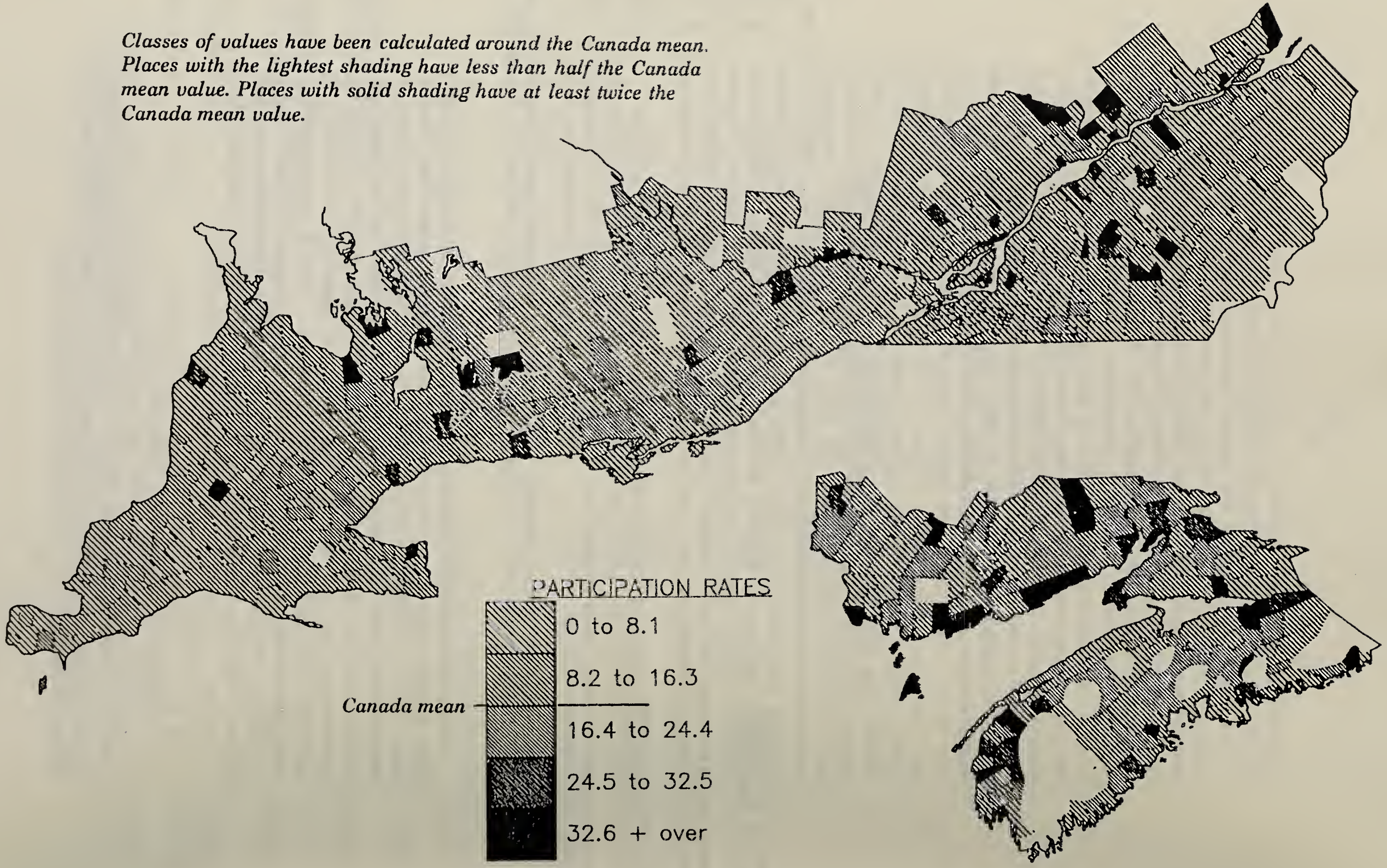
[15] Census of Canada, 1870-1, Volume III, p. x.

[16] For a more detailed discussion of women's industrial work in 1871, see Canadian Women in Workshops, Mills, and Factories: The Evidence of the 1871 Census Manuscripts, #11 in this series of research reports.

Figure 6: PARTICIPATION BY MEN IN INDUSTRIAL WORKFORCE, 1871
percent of all men aged 16+ years by Census Sub-districts

Classes of values have been calculated around the Canada mean. Places with the lightest shading have less than half the Canada mean value. Places with solid shading have at least twice the Canada mean value.



not work in industrial establishments throughout the full year before the taking of the census in early April 1871. Figure 6 illustrates the regional variations in the rates of men's participation in industrial activity in 1871.

*** What kinds of industrial processes and products were reported in 1871?**

The census enumerators used natural language to describe the kinds of establishment and raw materials and products they encountered. In creating the CANIND71 database, we entered the enumerators' words into the computer record, but we also assigned standardized codes to each record to denote industry types and major groups more precisely and consistently. These codes are vital for analysis of the data.

Each record in the CANIND71 database has been assigned a code according to the 1970 Standard Industrial Classification Manual of the Canada Dominion Bureau of Statistics.[17] Understandably, there were some problems in applying a 1970 classification to the conditions of a century earlier. Changes in technology have eliminated some industry types that were common in 1871. The more rudimentary level of economic and business organization in 1871 also meant that many enterprises combined industrial activities that would typically be separated in specialized businesses by 1970. In addition, the repairing of all kinds of goods and equipment was more integrally associated with manufacture in 1871.

The appropriate SIC code for each record was determined by study of both the stated kind of establishment and the actual products and raw materials reported in each case. Wherever possible, we chose the SIC code that best matched the actual outputs of the business as reported for the year ending March 31, 1871. The "kind of establishment" information alone could be quite misleading, as this term was sometimes an occupational label that did not really describe the actual products.

A woman might be described as a "milliner" but if the products of her business included only dresses and general women's clothing rather than bonnets, hats and women's head-dresses, she would be assigned a code of "244" for women's clothing and not "249-M" for millinery. Or another business might be described very generally as a "foundry", which would rate a code of "294" only if its products were primarily iron castings. But, more typically, the products of so-called foundries in 1871 were fabricated metal products such as stoves (307-S) or general machinery (315) or agricultural implements (311). In a third example, one who was by trade a blacksmith and so recorded in the "kind of establishment" column may have had opportunities to make all kinds of metal goods, often including carriages and wagons. If he made definite numbers of carriages or other items of transportation equipment, his business would be assigned the appropriate and more specific SIC code of "329" rather than "896" which would be assigned for a blacksmith engaged only in "country work and repairs".

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[17] For a more detailed discussion of our use of SIC codes, see Standard Industrial Classifications Applied to Historical Data (1989). The CANIND71 classification is based on Dominion Bureau of Statistics, Standard Industrial Classification Manual (Ottawa, 1970); for French-language equivalents we consulted Statistique Canada, Classification type des industries (Ottawa, 1990).

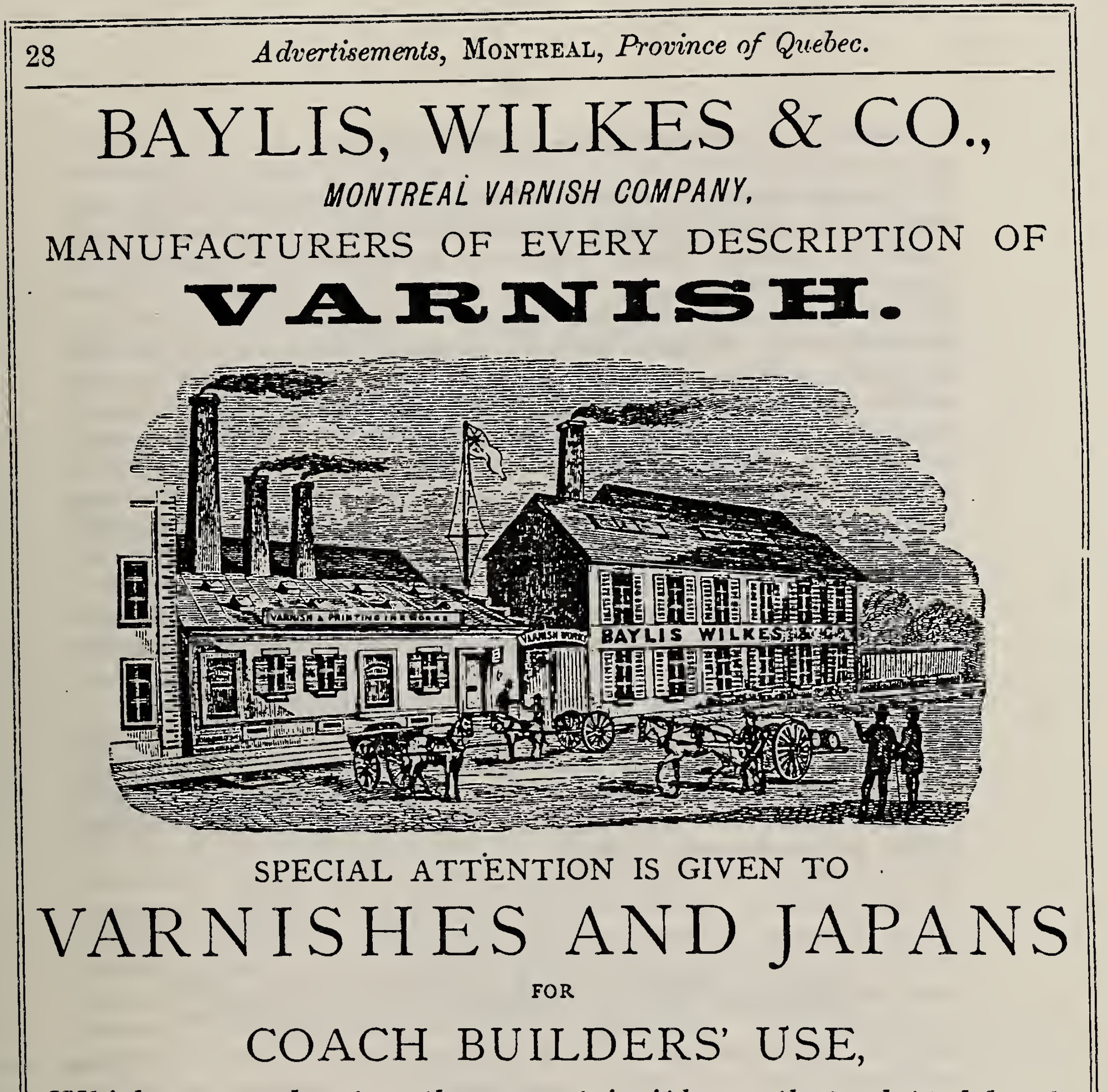
We adapted the 1970 system to the 1871 context in two main ways. First, suffixes of hyphen and capital letter might be added to the basic 3-digit code to give greater specificity, a brewery (109-B) being distinguished from a distillery (109-D), for example. Second, an establishment that combined two or more products or services was given a compound SIC code, consisting of the two most important linked by a slash (/), so that a flour mill-cum-distillery is represented as "105/109-D".

These elaborations of the basic classification system resulted in a total list of over 700 specific codes that were used to describe the 45,070 firms in the four provinces in 1871. A few of these codes were shared by large numbers of establishments. Thus 5,254 blacksmiths were assigned the SIC code of "896", 5,088 saw mills had the basic code of "251", and 4,189 shoemakers were coded "174". Some 2,830 handloom weavers were given the code "182-W"; 2,527 carriage and wagon makers were coded "329", and 2,098 flour mills share the code "105". At the other extreme, some significant enterprises had codes that were unique for Canada. Five examples of such firms were located in the highly industrialized Montreal ward of Ste-Anne. Each produced at least $50,000 worth of output and was the only business to have its particular SIC code in all of Canada. These were William Dow's brewery and distillery (109-D/109-B), James Robertson's lead pipe works (298-T), Robert Millard's spike and railway chair factory (309-C), Whalley & Woods floor oil cloth works (399-L), and Clare Lyman & Co's linseed and plaster mill (375/359-P).

Another, smaller firm with a unique SIC code was the Montreal Varnish Company of Baylis, Wilkes & Co., whose advertisement in Lovell's 1871 Dominion Directory is reproduced here (Figure 7). Assisted by a steam engine of 5 horse power, seven workers in this establishment, at 18-26 Nazareth Street in Ste-Anne's Ward, made $50,000 worth of varnish and printing ink out of gum, linseed oilm turpentine and black syrup.

Appendix Table A-1 lists the most common basic codes (including suffixes) that were each used at least 50 times in the CANIND71 database. Common compound codes used at least 50 times to describe enterprises that combined two or more principal types of products were:

105/105-O	flour and oatmeal mill
105/251	flour and saw mill
107/108-C	bakery and confectionery
179-S/179-T	saddlery/trunkmaking
244/249-M	dressmaking and millinery
249-M/244	millinery and dressmaking
251-S/259-C	shinglemaking and cooperage
251/251-S	saw mill and shinglemaking
254/261	sash, door and blind factory combined with furniture and cabinet making
261/258	cabinet and coffin making
261/329	cabinet and carriage making
307-S/311	manufacture of stoves and agricultural implements
311/329	agricultural implement and carriage making


VARNISH & PRINTING INK WORKS
VARNISH WORKS
BAYLIS WILKES & Co

28 *Advertisements,* MONTREAL, *Province of Quebec.*

BAYLIS, WILKES & CO.,

MONTREAL VARNISH COMPANY,

MANUFACTURERS OF EVERY DESCRIPTION OF

VARNISH.

SPECIAL ATTENTION IS GIVEN TO

VARNISHES AND JAPANS

FOR

COACH BUILDERS' USE,

Which are made upon the same principle as that adopted by the most noted English Houses.

B., W. & Co's. Varnishes can be obtained at all Hardware and Druggists' Stores throughout the Dominion of Canada.

B., W. & Co. call the attention of NEWSPAPERS and GENERAL PRINTERS to the fact that they have established a

Manufactory of Printing Ink,

and are prepared to supply all colors and qualities on most reasonable terms. Address

BAYLIS, WILKES & CO.,
OFFICE AND FACTORY, 18, 20, 22, 24 AND 26 NAZARETH STREET,
MONTREAL.

Source: Lovell's Dominion Canadian Directory, 1871, p. 28.

329/896 carriage making and blacksmithing

The complex details of the full SIC codes may be generalized by trimming these to the core 3-digit codes, of which a total of 107 were used in the CANIND71 database. The SIC codes may be further generalized into the Major Industry Groups that were also assigned to each record. Appendix A-2 shows how the wide variety of specific SIC types are generalized into the 26 Major Groups or SECs. Appendix Table A-3 presents a summary of all the main CANIND71 variables by the three-digit SIC codes, while Table A-4 does the same for SEC groups. This table also reflects the inclusion by the 1871 census enumerators of a wider range of industrial activities and processes than would be defined as manufacturing industry today. Eighty-six per cent of the establishments are classified as manufacturing industry, with SIC codes between 101 and 399 and in the Major Group 5 for Manufacturing Industry, and they account for 95 per cent of the total value of industrial output in 1871.

As many as 14 per cent of the businesses captured in the 1871 census manuscripts were assigned to Major Groups other than Manufacturing Industry, such as agricultural services (SEC 1), forestry (SEC 2), fishing (SEC 3), mines, quarries, oil and salt wells (SEC 4), construction (SEC 6), utilities (SEC 7), trade (SEC 8), and services (SEC 10), the last of these consisting mainly of a large group of blacksmiths. By excluding establishments with these SEC codes, we may create more select datasets from the original database for comparative purposes, limiting their attention to activities which are now more narrowly defined as manufacturing industry.

Table 4
Range of Industry Types and Major Groups, 1871:
numbers of SIC and SEC codes used, by province

	SIC codes			SEC codes
	full	basic	core	
Ontario	509	172	100	26
Quebec	383	168	96	26
New Brunswick	198	107	72	24
Nova Scotia	214	102	75	26
CANADA	706	196	109	26

Source: compiled from CANIND71 database

The range of SIC codes summarized in Table 4 shows that industrial activity was more complex and varied in Ontario and Quebec than in the two Maritime provinces. **Full** SIC codes may include compounds for establishments that combined two main products. **Basic** SIC codes do not include compounds but do allow for suffixes. Trimmed or **core** SIC codes subsume all suffixes in the primary three-digit code. There are only 26 SEC codes of Major Industry Groups. Thus a distillery combined with a brewery would have a full compound SIC code of 109-D/109-B, if there is evidence that the distilled products were more valuable than the brewed products. Such an establishment's basic SIC code would be 109-D, which could be trimmed to the core three-digit code of 109 that included all types of beverage manufacture. The SEC code of such a firm would be 5.01, within the Major Group for all Foods and Beverages.

How do the CANIND71 data for industrial establishments compare with the information that was published in the 1871 Census reports? Some information was published in Tables XXVIII to LIII of the Census of Canada, 1870-71 for five series of 138 different industry types, by the 206 Census Districts and the four provinces. The variables were number of establishments, employees (distinguished into males and females, under and over 16 years), yearly sum of wages, cost of raw materials, and value of products. Provincial totals only of fixed capital were presented for each industry type (Table LV). In the 1950s, staff of the Dominion Bureau of Statistics recompiled the Canada totals of these published data according to the 1948 Standard Industrial Classification and their summary data have been incorporated into the time-series tables published in both editions of Historical Statistics of Canada, edited by Urquhart and Buckley.

We have compared the CANIND71 data derived from the manuscript schedules with our computerized version of the published tables for all Census Districts, both coded according to the 1970 SIC system. We note several differences in the sums at the Census District level between the manuscript and published data. Some of these can be explained by errors of omission or of addition by the tabulating clerks in Ottawa in the early 1870s. More significantly, certain types of establishments that were recorded in the manuscript schedules seem to have been systematically excluded from the published tabulations. Though such exclusions were not mentioned in the published report, we can deduce that the excluded industry types were handloom weavers (2,839 establishments in the manuscript census), hand knitters (109 establishments) and most shingle-makers. The rationale for excluding these types may have been a sense that information for these activities had not been collected on the same basis in every Census District and that it should all be excluded. Certainly, entries for handloom weavers in the manuscript census schedules seem to be concentrated in particular Census Enumerators' Divisions, suggesting that not all enumerators took the trouble to count these workers.[18]

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[18] For a discussion of the evidence of domestic weaving in the 1871 census, see Janine Grant and Kris Inwood, "Gender and Organization in the Canadian Cloth Industry, 1870" in Canadian Papers in Business History, Volume 1, edited by Peter Baskerville (Victoria, BC: Public History Group, University of Victoria, 1989) pp. 17-32; Janine Roelens and Kris Inwood, "Labouring at the Loom: A Case Study of Rural Manufacturing in Leeds County, Ontario, 1870," in Canadian Papers in Rural History, Volume VII, edited by Donald H. Akenson (Gananoque: Langdale Press, 1990) pp. 215-236.

*** How seasonal was industrial work in 1871?**

Analysis of the seasonality of industrial work in 1871 is possible because enumerators usually recorded for each establishment the number of working months in the year ending March 31, 1871. Table 5 shows that only 55 per cent of all industrial firms reported working through the full 12 months, fewer than four in every ten firms in Nova Scotia and New Brunswick doing so. All the other measures suggest that industrial work was more seasonal in the two Maritime provinces than in Quebec and Ontario. It is interesting that women's industrial work seems to have been less seasonal than men's in all provinces, the contrast being most marked in Nova Scotia.

Table 5
Seasonality of industrial activity in Canada, 1871
full-year firms percent total for each measure

	CANADA	Ontario	Quebec	NB	NS
Industrial firms	54.9	61.1	56.2	37.9	37.6
Fixed capital	72.0	75.2	73.7	42.0	67.0
Men workers	63.5	69.6	64.7	39.9	48.9
Women workers	76.9	73.5	83.3	58.2	81.1
Value of output	72.0	72.9	76.5	48.1	51.3
Added value	73.7	73.2	79.7	54.6	66.3

Source: compiled from CANIND71 database.

A fair proportion of industrial establishments reported working under four months in the year preceding the census. In Canada as a whole, 19 per cent of all firms operated for under four months and accounted for 8 per cent of all industrial workers. One in four Nova Scotia establishments and one in three in New Brunswick reported working for less than four months of the year. Figure 8 illustrates the spatial variations in seasonality of industrial activity, measured by the incidence of establishments operating the full 12 months of the year. Census Sub-Districts are shaded in four categories according to the percentage of their industrial establishments that operated for the full twelve months before 1871 Census. In Canada at large, 55 per cent of all industrial units worked the full year. Establishments that reported working seasonally tended to be more significant on the settlement frontier, where men combined farming with work in sawmills or with making shingles, lime or potash. In some districts, women reported handloom weaving, or knitting for only part of the year. These practices are reflected in Table 6 by the quite high percentages of the textile, wood, non-metallic mineral, and chemical groups that reported operating 3-6 months or 0-3 months. Tobacco, clothing, metal fabricating, and leather businesses were most likely to work the full year.

Figure 8 SEASONALITY OF INDUSTRIAL ACTIVITY, 1871
percent of establishments in each Census Sub-District
working full 12 months, April 1870 - March 1871.

Classes of values have been calculated around the Canada mean. Places with the lightest shading have less than half the Canada mean value. Places with solid shading have at least 1.5 times the Canada mean value.

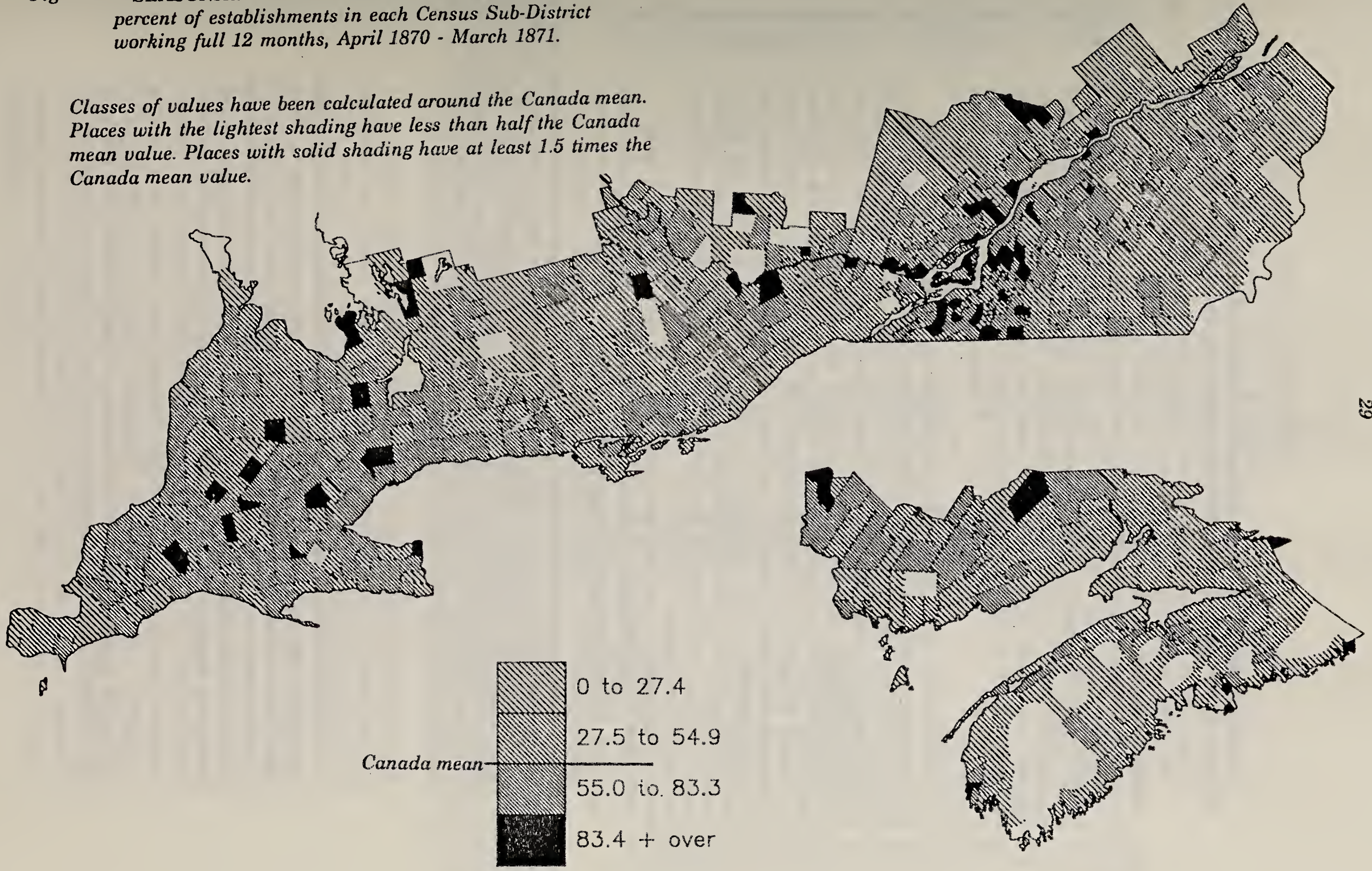

Table 6
Canada: seasonality of industrial activity
percent firms in major industry groups by number of working months

Major Industry Group	12mo	9-12mo	6-9mo	3-6mo	0-3mo
1.00 Agrc services	6.8	13.6	18.2	20.4	40.1
2.00 Forestry	50.0		21.4	14.3	14.3
4.00 Mines/Quarries	56.7	16.7	1.7	15.0	5.0
5.01 Food, drink	57.9	7.0	17.8	11.3	5.3
5.02 Tobacco	86.8	9.2	3.9		
5.03 Rubber	50.0	25.0	25.0		
5.04 Leather	81.5	4.7	7.5	3.3	2.2
5.05 Textiles	16.0	8.7	25.3	25.4	22.8
5.06 Knitting	10.3		1.7	3.4	84.5
5.07 Clothing	85.0	4.0	5.8	2.3	1.7
5.08 Wood	22.9	6.0	18.8	23.7	24.0
5.09 Furniture	79.9	3.1	8.6	5.1	2.3
5.10 Paper	68.3	21.9	9.8		
5.11 Printing	75.5		1.1	0.5	2.2
5.12 Primary metals	79.3	7.6	6.5	3.3	3.3
5.13 Metal fabricatg	84.3	4.5	5.5	3.4	1.7
5.14 Machinery	72.7	5.1	10.7	7.3	3.8
5.15 Transport equpmt	77.9	5.8	7.6	5.7	2.9
5.17 Non-metal.mins	12.9	4.4	20.0	28.8	32.4
5.18 Oil refineries	46.0	24.0	18.0	8.0	4.0
5.19 Chemicals	27.0	6.1	18.3	19.8	23.4
5.20 Miscell. mfg	79.3	2.0	5.1	9.4	3.3
6.00 Construction	69.2	10.7	14.6	3.4	1.8
7.00 Gas/water utilities	87.5		6.2	3.1	
8.00 Repair. miscell	83.8	1.5	3.7	4.4	5.9
10.00 Services/blacksmiths	76.8	4.8	8.0	5.6	4.4

Source: compiled from CANIND71 database.

Note: Lines for each major industry group do not always add to exactly 100 per cent, owing to (usually) small proportions of records in which the number of working months was not stated. These records were most significant with wood processing industries (SEC 5.08) where they constituted 4.6 per cent of all establishments; with printing and publishing (5.11) where the percentage with months not stated was as high as 19.7 per cent; and with chemicals (5.19) where 5.4 per cent of all records lacked data for months in operation.

The information captured in the CANIND71 database also permits analysis of monthly wage rates from industry to industry and from place to place. Using the details provided for the number of months in operation, the total number of workers and the annual wage bill, we calculated the variable AVWAGE for the average monthly wage per worker in each establishment. (If any of these details was missing, AVWAGE was not calculated). However, AVWAGE data are more useful for establishments and industry groups in which the workforce consisted entirely of one gender-age category: men, women, boys or girls. Enumerators were not asked to distinguish wages paid to these groups, so where the workforce consisted of a mixture of men, women, boys and girls, the AVWAGE data are less useful.

3 INDUSTRIAL POWER TECHNOLOGY

How significant were the various forms of industrial power in nineteenth-century Canada? What were the geographical variations and concentrations in industrial production associated with water, steam, horse and hand power? What factors influenced entrepreneurs to replace hand power with inanimate forms of power or to retain cheap hand labour in some trades? How did nineteenth-century Canada compare with more industrialized countries in the transitions from hand to inanimate forms of power and from water to steam? The information recorded in the 1871 census manuscripts for type of power and numbers of horse power units of non-manual sources of power offers potential for addressing questions such as these.[19] None of this information was tabulated or published at the time and is becoming available for the first time as part of the CANIND71 database.

We use the term "power" to describe the motive force derived from primary energy, and "powered establishment" refers to an industrial firm using power other than hand or manual power. The emphasis in this section is on inanimate power, though industrial power derived from horse-windlasses and or from hand or manual power is compared with water and steam power at various points. The term "waterwheel" is used generally here (as it was in the early 1870s) to include not only the traditional overshot and undershot wheels but also the more modern breast wheels and turbines. Census data do not distinguish between the various types of waterwheel. The water/steam type refers to older water-powered establishments that had added a steam engine to supplement the usual power source in periods of low water flow.

Table 7 summarizes the use of various forms of industrial power in 1871. Just under one-quarter of Canada's establishments reported using water or steam power. However, such firms were disproportionately significant in terms of employment, investment and production. Water- and steam-powered enterprises employed just over half of all industrial workers, reported nearly three-quarters of fixed capital invested in industry, and accounted for nearly 65 per cent of the gross value of output and nearly 70 per cent of value added in manufacturing. Nearly three of every four establishments reported no power other than manual labour, and these accounted for 47 per cent of all industrial workers, 34 per cent of gross value of output and 38 per cent of value added.

In Table 8, some provincial variations are evident. Steam power was most significant in Ontario, where it supported 36 per cent of the gross value of output and least important in Nova Scotia where under one-quarter of production was steam-powered. Water power was roughly similar in all provinces except Nova Scotia, which also showed a much higher dependence on hand power. Altogether, Canada still depended on water power to a far greater extent than other industrialized nations at the same time. Only 28 per cent of total inanimate industrial horsepower was derived from steam in Canada, compared with 52 per cent in the United States and 94 per cent in Britain.

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[19] A preliminary study of these questions is reported in Water Wheels and Steam Engines in Ontario (#2 in this series of research reports) and in Gerald Bloomfield and Elizabeth Bloomfield "Waterwheels and Steam Engines in Ontario: Industrial Power Reported in the 1871 Manuscript Census" Scientia Canadensis 13, 1 (1989): 3-38.

Establishments with the largest nominal force capacity were mainly powered by waterwheels. Some 158 establishments throughout Canada reported using water-power with a force of at least 100 horse power, and 34 of these had at least 250 horse power (Table A-5 in Appendix). Ninety of the firms reporting at least 100 horsepower were saw mills, 40 were flour mills, and 12 textile mills. Only 50 steam-powered enterprises reported 100 horse-power or more, and only the rolling mills in Hamilton and Toronto used at least 250 horse power (Appendix Table A-6). We note that a very large horse-power capacity was not always associated with high production or value added. Some water-powered businesses reported large horse-power capacities but only modest production.

Table 7
Canada: types of industrial power, 1871
percentages by various measures

Type of Power	**Estabs**	**HP Force**	**Fixcap**	**Employmt**	**Productn**	**Value added**
Hand	72.9		24.0	47.2	33.9	38.5
Horse	2.4	0.8	2.5	2.5	1.4	1.8
Steam	6.3	26.2	42.9	28.4	33.9	37.8
Water	17.9	69.7	28.3	20.3	28.2	20.2
W/S	0.4	3.1	3.2	1.5	2.5	1.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: compiled from CANIND71 database

Table 8
Canada: value of output in provinces, 1871
percentages by type of power

	Hand %	**Horse** %	**Steam** %	**Water** %	**W/S** %
Ontario	30.9	1.2	36.0	28.6	3.1
Quebec	35.2	1.8	33.0	28.0	1.9
New Brunswick	39.4	0.5	30.0	29.2	0.8
Nova Scotia	47.1	1.3	24.6	24.9	2.1
CANADA	33.9	1.4	33.9	28.2	2.5

Source: compiled from CANIND71 database

Table 9
Canada: value of output in major industry groups, 1871
percentages by type of power

Major Industry Group	Hand %	Horse %	Steam %	Water %	W/S %
1.00 Agrc services	15.1	75.8	2.7	6.4	
2.00 Forestry	85.0		14.9		
4.00 Mines/Quarries	15.9	0.3	63.6	12.3	2.9
5.01 Food, drink	18.9	0.7	27.6	49.4	3.2
5.02 Tobacco	22.8	2.8	73.4	1.0	
5.03 Rubber			99.0	1.0	
5.04 Leather	50.9	3.1	38.0	3.8	4.0
5.05 Textiles	17.5	0.3	17.1	58.1	6.9
5.06 Knitting	4.2		13.2	53.0	29.0
5.07 Clothing	92.0		8.0		
5.08 Wood	9.1	0.4	40.8	47.6	1.5
5.09 Furniture	35.8	3.0	49.7	10.6	0.7
5.10 Paper	3.3		23.6	58.3	14.7
5.11 Printing	49.4	0.2	50.1	0.1	
5.12 Primary metals	3.0	0.5	85.0	6.6	4.9
5.13 Metal fabricatg	35.1	0.5	39.6	23.5	1.2
5.14 Machinery	6.5	1.7	75.9	12.9	2.8
5.15 Transport equpmt	68.4	2.5	23.8	4.4	0.9
5.17 Non-metal.mins	52.2	18.8	20.4	8.1	
5.18 Oil refineries	1.4	0.1	98.4		
5.19 Chemicals	64.4	0.3	29.2	4.6	1.6
5.20 Miscell. mfg	69.7	0.3	25.0	5.0	
6.00 Construction	84.2	1.2	13.3	1.0	0.3
7.00 Gas/water utilities	56.9	3.5	37.5	0.2	
8.00 Repair. miscell	100.0				
10.00 Services/blacksmiths	98.6	0.2	1.1	0.4	

Source: compiled from CANIND71 database

Information for type of industrial power may be cross-tabulated with industrial sector or major industry group. By far the largest numbers of enterprises powered by water or steam were in food and beverages (especially flour and grist mills) and wood processing (saw mills), followed by textiles (mainly woollen cloth mills). Non-metallic minerals (brick and pottery kilns) and leather (tanneries) used mainly horses; most businesses reporting live horse power were one-or two-horse units. Table 9 shows the percentage of the value of output in each sector that was supported by the main types of power.

Clearly, a large proportion of industrial activity in several sectors still depended on manual power. At least half the production of boots and shoes, clothing, printing and publishing, transportation equipment (mainly carriages and wagons), non-metallic minerals, miscellaneous manufactures, construction, and services such as blacksmiths depended on hand power alone, and was not assisted by waterwheels, steam engines or horses. A closer look at several of these sectors provides evidence of a dual technology or dichotomy between a small group of mechanized enterprises using inanimate power and operating on a relatively large scale and the great mass of artisanal enterprises working on small scales and using hand power alone.

The same data may also be calculated to show the relative importance of particular sectors or major industry groups to each type of power source. Six of every ten water-powered establishments were in the wood processing sector (mainly saw mills), one in four in food processing (grist and flour mills) and one in ten were textile mills. The same sectors predominated in establishments that depended on waterwheels boosted with steam engines. The largest proportion of steam-powered enterprises were in wood processing (40 per cent of firms and 52 per cent of horse power units reported), with food processing, machinery, and leather working approximately equal at 9 to 12 per cent each. Horses were used mainly in establishments processing non-metallic minerals such as brickyards and pottery (31 per cent of all firms reporting horses), or in tanneries (17 per cent), carriage-building (12 per cent), or food processing (10 per cent).

Steam power was associated with a more diverse range of industrial types than was water power. This is evident in a sample of all establishments reporting 20 horse-power capacity. Three of every four such enterprises reported water power, and 96 per cent of these were processing wood (saw mills), food (mainly flour mills), or textiles. While 60 per cent of the steam-powered businesses with this capacity were saw mills or grist mills, a great variety of other industrial types included gold crushers, breweries, oil refineries, and establishments making sewing machines, measuring scales, and musical instruments.

The geographical patterns of industrial use of various types of power may readily be illustrated and analyzed, at every scale from individual units in a locality up to whole counties or larger regions. This capability depends on the careful geographical coding of all records, so that they may be aggregated and disaggregated by territorial units from the basic census enumerator's division, through the census subdivision to whole counties or regional groups of counties. More sophisticated ratios and indices may be mapped for geographical units at various scales. Figures 9 and 10 show the coefficient values of production in each of the 206 Census Districts of 1871. The map patterns illustrate the variable dependence from place to place on waterwheels or steam engines, in relation to the national mean. Districts with a coefficient above unity (1.0) had a higher dependence on that form of power than the mean for Canada. Coefficients above 2.0 indicate that the dependence was over twice the Canada mean while coefficients under 0.5 indicate that dependence was less than half the national mean. In large regions such as southwestern Ontario where water power was scarce, industry had to depend on steam engines to a much greater extent. Water power was relatively significant for industry along the Niagara Escarpment and upper Grand River valley north and northwest of Hamilton.

There were notable differences between urban and rural areas in the use of inanimate power for industry in 1871. Over two-thirds of all powered establishments were in rural districts while hand labour persisted strongly in urban centres. The availability of local water power had been important in the founding of many villages and towns. But industrial growth often meant that waterwheels had to be supplemented by steam engines from the 1850s. Thus, by 1871, steam power was more common in urban than in rural areas, and urban powered enterprises were generally larger and more productive than rural ones. Steam-powered establishments in urban centres also represented a much wider range of industrial types than rural powered establishments. If we consider only Ontario establishments reporting 25 or more horse-power capacity, nearly half used steam power compared with only 17 percent of the

Figure 9

USE OF WATER POWER IN INDUSTRY

Percentage of industrial output in each Census Sub-District supported by waterwheels. Classes of values have been calculated around the Canada mean. Places with the lightest shading have less than half the Canada mean value. Places with solid shading have at least twice the Canada mean value.

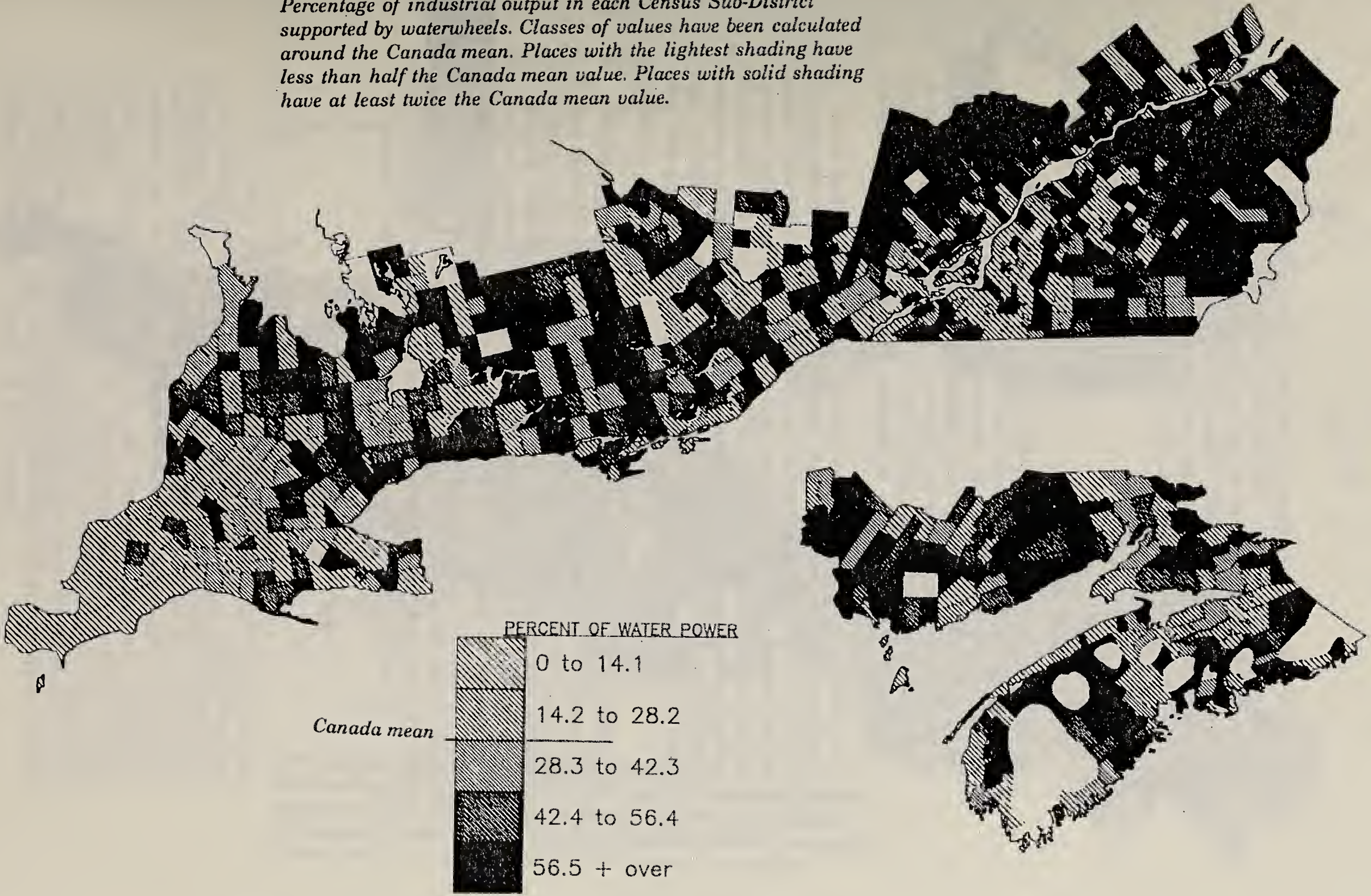
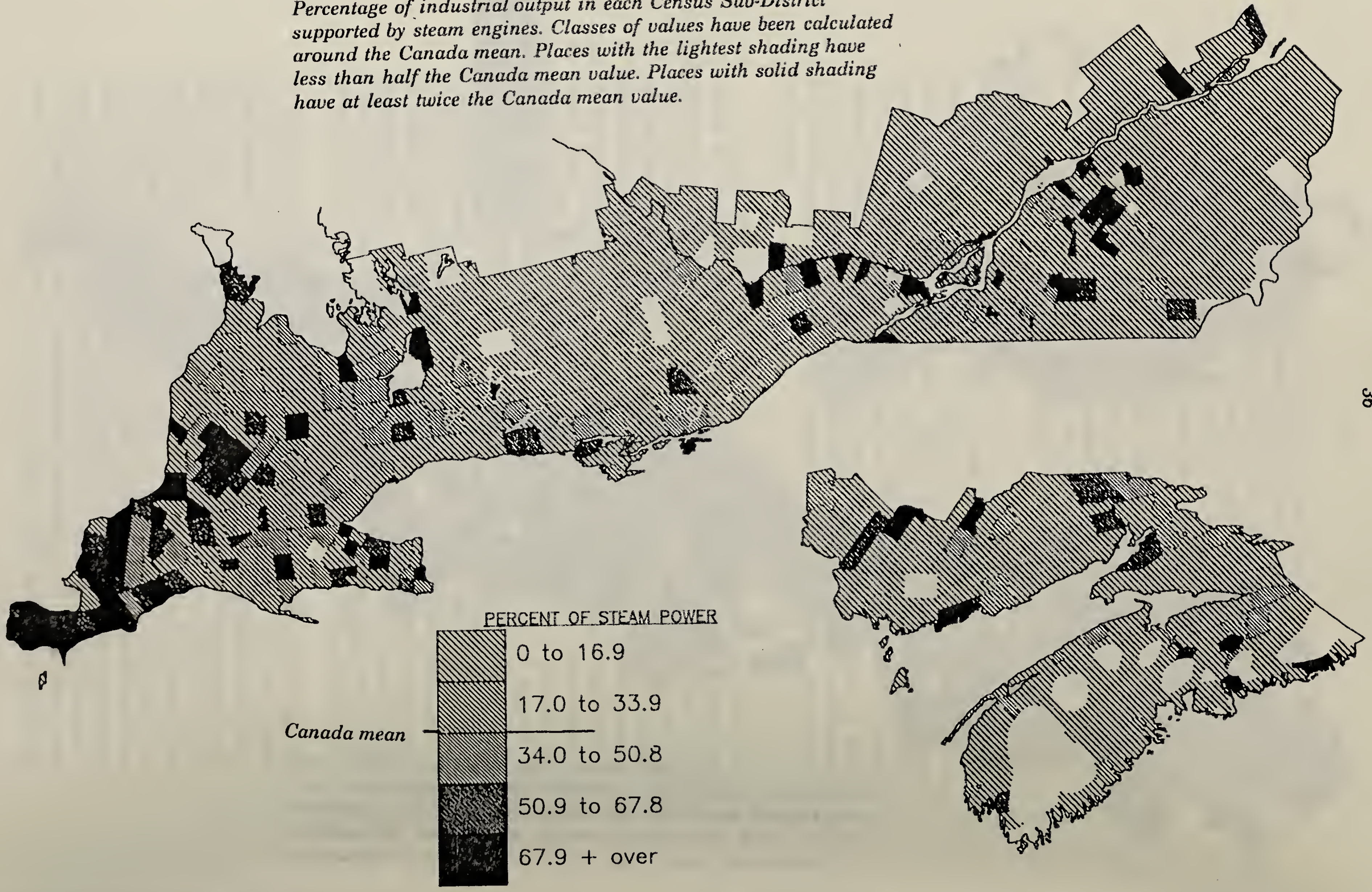


Figure 10 USE OF STEAM POWER IN INDUSTRY

Percentage of industrial output in each Census Sub-District supported by steam engines. Classes of values have been calculated around the Canada mean. Places with the lightest shading have less than half the Canada mean value. Places with solid shading have at least twice the Canada mean value.



rural establishments. Steam power was especially significant in most of the large urban centres, contributing 95 per cent of all non-manual power in Toronto, 98 per cent in Hamilton, and 100 per cent in Saint John and Quebec City. Montreal and Ottawa were exceptions. Water power generated along the Lachine Canal accounted for nearly 40 cent of Montreal's inanimate power, while water-powered sites on the Ottawa River provided 95 per cent of that city's inanimate power.

4 WORK ENVIRONMENTS

The 1871 database allows us to examine the organization of industrial capitalism at a time of transition from artisanal craftshops to factories using machinery and integrated work processes. A useful concept in understanding this transition is the **work environment**, which combines measures of the size of the workplace with the extent to which non-manual power was used in the industrial process. A typology of work environments, based on the Philadelphia research of Laurie and Schmitz, distinguishes eight types (Figure 11).[20]

Basic distinctions are drawn between workplaces with no inanimate power (represented on the left side of diagram) and workplaces powered by water or steam (right side). Work environments are further categorized as to the size of their workforces, producing four size classes: 1-5 workers, 6-25 workers, 26-50 workers, and 51 or more workers. Powered establishments with at least 26 workers are called **factories**, while **manufactories** are non-powered workplaces with at least 26 workers. Smaller powered establishments are called **mills** if they had from 6 to 25 workers, **powered craftshops** if they had 5 or fewer workers.

Workplaces using only hand or horse power are called **artisans' craftshops** if they employed 5 or fewer. Slightly larger craftshops, without power and employing between 6 and 25 workers, were called **sweatshops** by Laurie and Schmitz in the Philadelphia context though they acknowledged that the term presented some definitional problems. **Outworkers**, who toiled at home under the putting-out system, would be included with the artisans' craftshops, from which it is hard to distinguish them on census manuscript evidence alone. We should remember, however, that the terms used to describe the eight types do not really match contemporary usage when factories, manufactories and shops were generic terms used interchangeably for all sizes of establishment.

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[20] B. Laurie and M. Schmitz, "Manufacture and Productivity: The Making of an Industrial Base, Philadelphia, 1850-1880," in T. Hershberg, ed. Philadelphia: Work, Space, Family and Group Experience in the Nineteenth Century (New York, 1981): 43-92. Ian McKay used size of output in classifiying workplaces in "Capital and Labour in the Halifax Baking and Confectionery Industry During the Last Half of the Nineteenth Century," Labour/Le Travailleur 3 (1978): 63-70. For applications of the typology of work environments to Canada in 1871, see Bloomfield and Bloomfield, The Ontario Urban System at the Onset of the Industrial Era, #3 in the CANIND71 series of research reports, and The Hum of Industry: Millers, Manufacturers and Artisans of Wellington County, #9 in the series.

USE OF POWER

SIZE OF WORKFORCE	non-powered (hand/horse only)	powered by water or steam	SIZE OF WORKFORCE
51+	MANUFACTORIES (larger)	FACTORIES (larger)	51+
26–50	MANUFACTORIES (smaller)	FACTORIES (smaller)	26–50
6–25	SWEATSHOPS and larger CRAFTSHOPS	MILLS	6–25
1–5	ARTISANS' CRAFTSHOPS	POWERED WORKSHOPS, smaller MILLS	1–5
	non-powered (hand/horse only)	powered by water or steam	

Figure 11: Typology of work environments, 1871

How significant were the various work environments in Canada in 1871? In Table 10 the proportions of workers in the eight basic types of work environment are summarized for Canada and the four provinces. We note that in all but Nova Scotia, workers in non-powered workplaces made up much the same proportion of about half the total workforce. There are more differences between the provinces in the size of workplace, with Quebec having one of every two of its workers in manufactories and factories that employed at least 26 workers each. Indeed, nearly one third of Quebec's workers were in the larger powered factories that employed at least 51 workers each. The larger share of non-powered workplaces generally and of small powered shops employing 5 or fewer workers make that province distinctive.

The workplace environments of Montreal, Toronto and Quebec City, as the largest industrial centres, are compared with the aggregate patterns for all Canada urban places and for rural Canada in Table 11.. Urban and rural workers generally were almost equally distributed between powered and non-powered work environments. They differed most in the scale of operation of their workplaces. Urban workers were more than twice as likely as rural workers to be in settings of at least 25 fellow employees. They were nearly three times as likely as rural workers to be employed in non-powered shops of 6-25 employees.

Table 10

Distribution of workers in work environments, 1871

Work Environment	**Canada**	**Ontario**	**Quebec**	**NBrunswick**	**NScotia**
	%	%	%	%	%
Non-Powered					
Artisans (1-5 emp)	27.2	29.1	24.5	26.4	28.7
Sweatshops (6-25 emp)	13.5	14.3	12.0	12.7	15.7
Manufactories (26-50 emp)	4.0	2.9	4.0	5.2	9.5
Manufactories (>51 emp)	5.2	3.4	7.9	5.8	3.4
Sub-Total	49.9	49.8	48.4	50.0	57.3
Powered					
Small (1-5 emp)	8.9	8.4	7.3	8.3	19.1
Medium (6-25 emp)	11.7	15.7	6.5	12.2	10.0
Factories (26-50 emp)	6.7	7.1	5.9	9.4	5.0
Factories (>51 emp)	22.8	19.0	31.9	20.1	8.5
Sub-Total	50.1	50.2	51.6	50.0	42.6
TOTAL	100.0	100.0	100.0	100.0	100.0

Source: compiled from CANIND71 database

But there were contrasts among urban centres in the proportions of the various types of workplace. Montreal and Toronto were very similar to oone another and differed from the general pattern for all urban centres in having well over half of their workers in workplaces that employed at least 50, especially the powered larger factories. Large manufactories employed significant minorities of the workforce in both these large cities, especially in establishments making footwear or clothing.[21] While only one in twenty of Hamilton's industrial establishments employed over 50 workers, large factories accounted for 47 per cent and large manufactories for a further 8 per cent of the city's workers. Hamilton had an even greater share (47 per cent) of its industrial workers in large factories, but only 8 cent of its workers were in large manufactories. The implications of these structural trends in the larger cities for the segregation of home and workplace and for a lengthening "journey to work" in the later nineteenth century have been introduced for Toronto by Goheen and for Hamilton by Doucet.[22] Artisanal shops were much more weakly represented in the cities of Toronto and Hamilton than in other urban centres of Canada and especially in rural Canada.

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[21] The proportion of Toronto workers employed in large establishments in 1871 was almost exactly the same as reported for Philadelphia (Laurie and Schmitz, "Manufacture and Productivity", p. 52). G.S. Kealey has also discussed the size of industrial workplaces in Toronto Workers Respond to Industrial Capitalism (Toronto, 1980) pp. 28-30, 299-306. The workplaces of Montreal are discussed also by E. Martel in "L'industrie à Montréal en 1871" (Thèse de maîtrise, Université du Québec à Montréal, 1978) and, for the footwear industry, by J. Burgess in "L'industrie de la chaussure à Montréal: 1840-1870 - - le passage de l'artisanat à la fabrique" Revue d'histoire de l'Amérique française 31 (1877): 187-210.

Table 11
Distribution of workers in work environments, 1871

Work Environment	Rural Canada %	Urban Canada %	Montreal %	Toronto %	Quebec City %
Non-Powered					
Artisans (1-5 emp)	37.8	16.1	7.2	6.1	14.0
Sweatshops (6-25 emp)	7.3	20.0	16.9	16.2	23.2
Manufactories (26-50 emp)	2.1	6.1	7.6	6.6	6.1
Manufactories (>51 emp)	2.3	8.2	12.2	15.3	17.2
Sub-Total	49.5	50.4	43.9	44.2	60.5
Powered					
Small (1-5 emp)	15.4	1.9	0.2	0.5	0.2
Medium (6-25 emp)	13.8	9.5	3.7	5.4	3.5
Factories (26-50 emp)	5.7	7.7	6.9	7.2	4.3
Factories (>51 emp)	15.4	30.5	45.3	42.7	31.6
Sub-Total	50.5	49.6	56.1	55.8	39.5
TOTAL	100.0	100.0	100.0	100.0	100.0

Source: compiled from CANIND71 database

In Figures 12 to 14, the information of Tables 10 and 11 is shown more graphically. The combination of workplace environments in a given region, city, or type of locale is represented as a "wheel" graph according to the following rationale and the typology presented in Figure 11 and explained in the text. Small workplaces in the lower half of each wheel are distinguished from the larger workplaces in the upper half, in the four size classes: 1-5 workers, 6-25, 26-50, and 51 and over. Powered workplaces on the right of each graph are distinguished from those using no inanimate power on the left. Eight types of work environments are thus distinguished. Percentages of all industrial workers

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[22] P.G. Goheen, Victorian Toronto, 1850-1900: Pattern and Process of Growth (Department of Geography, University of Chicago, 1970); M.J. Doucet, "Working Class Housing in a Small Nineteenth Century Canadian City: Hamilton, Ontario 1852-1881", in Essays in Canadian Working Class History, edited by G.S. Kealey and P. Warrian (Toronto, 1976): 83-105.

Figure 12: WORKPLACE ENVIRONMENTS I

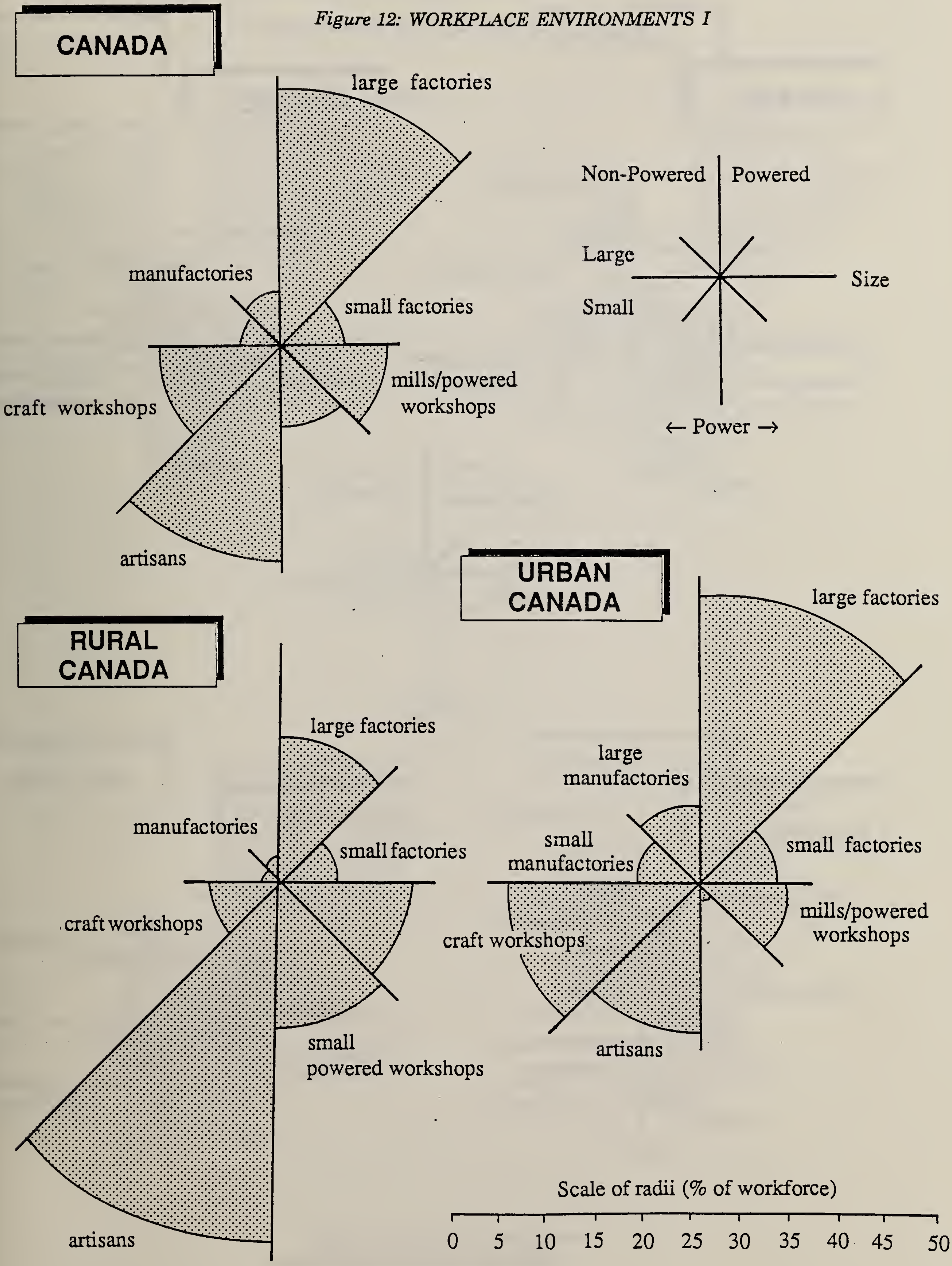


Figure 13: WORKPLACE ENVIRONMENTS II

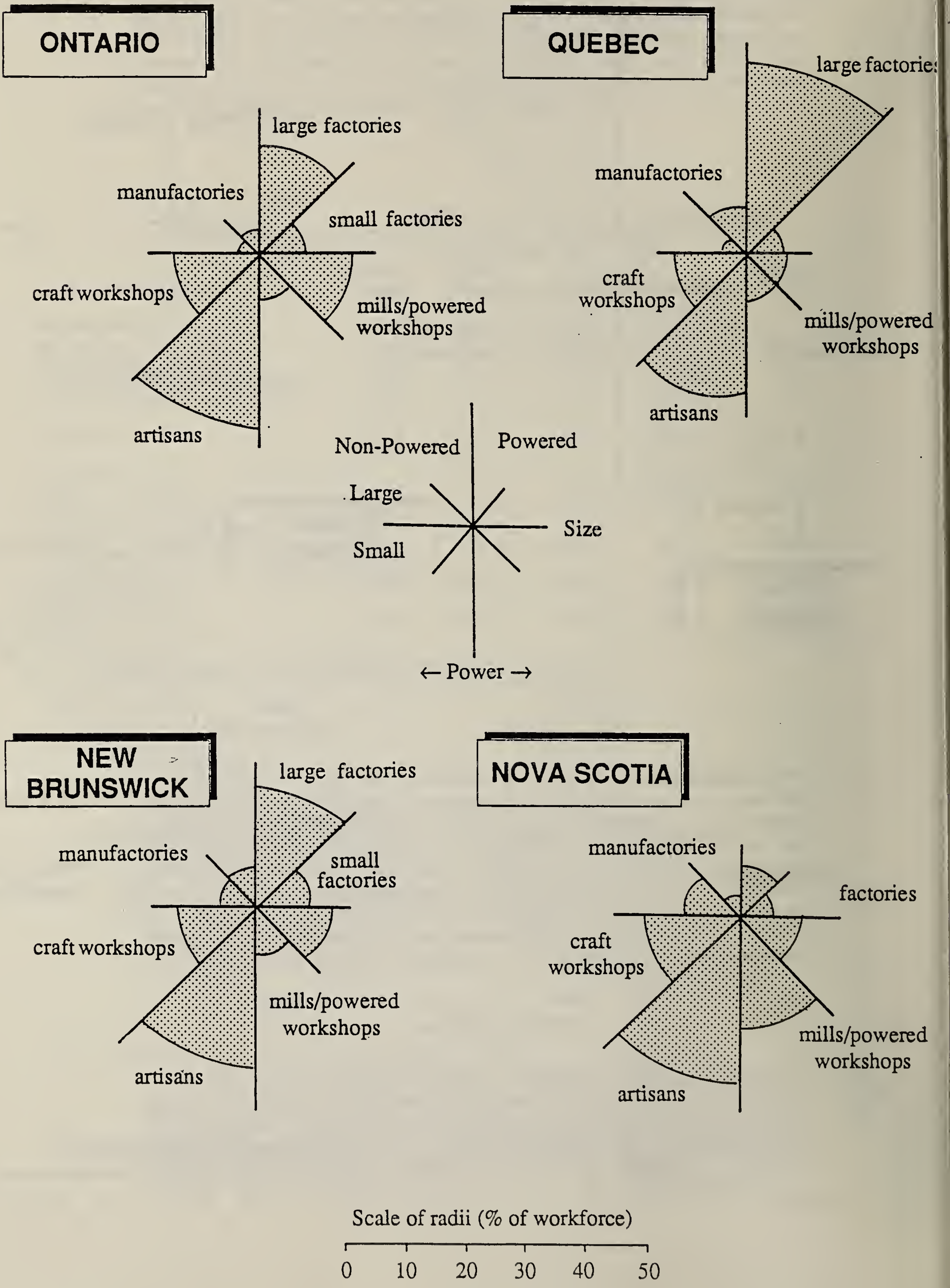
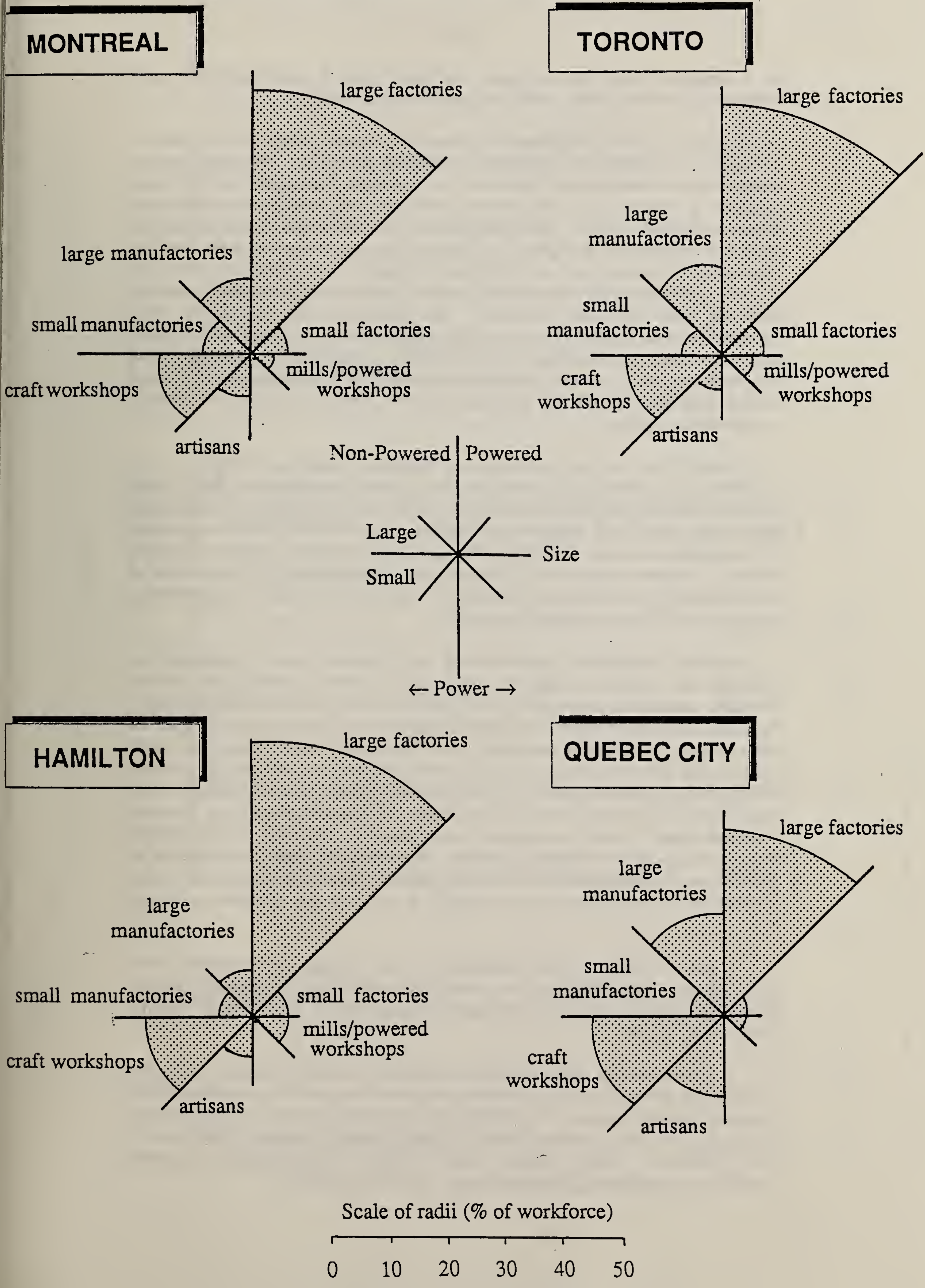


Figure 14: WORKPLACE ENVIRONMENTS III



in a region or city are calculated for each type of workplace and then represented by arcs whose radii are proportional in length.

Figure 12 clearly illustrates the general rural-urban contrasts in types of workplaces, in relation to the pattern for Canada as a whole. The most obvious interprovincial contrasts in Figure 13 are between the significance of large factories in Quebec and the general small size of Nova Scotia workplaces, whether powered or not. The workplaces of Canada's four largest industrial cities are summarized in Figure 14. Quebec City, with about the same number of people as Toronto, had a very different combination of workplaces. Only two of every five industrial employees in Quebec City worked in a powered setting, most of these in large factories. The proportion of workers in large manufactories in Quebec City was a little higher than in Montreal and Toronto and more than twice as high as in Canadian urban centres generally. The artisanal and hand-powered character of Quebec City's workplaces in 1871 may reflect both the age of the city and the fact that it was not yet directly connected by railway.[23]

Table 12 sets out the distribution of Canadian industrial workers in each industrial sector through the various types of work environment of 1871. With its rich detail on the size and scale of operation and use of power of individual firms, the CANIND71 database contributes good evidence of the co-existence of very different modes and scales of operation, between and within industrial sectors. Further analysis will increase our understanding of the process of industrialization through an awareness of the variable paths of development followed by different industrial sectors.[24]

Artisanal craftshops, manufactories and factories can be identified in virtually all industry groups in 1871, but in widely varying proportions. Woollen, cotton and paper mills most clearly conform to the "textile paradigm" in which modern factories have largely displaced craft and artisanal shops. As with primary metals and machinery, each of these industry groups had over 90 per cent of its workers in powered establishments, and at least 60 per cent in factories of over 26 workers. Wood-processing (mainly saw and shingle mills) had proportions which were nearly as high. The dominance of large, powered establishments in these sectors may be contrasted with the mix of non-powered work settings in the clothing industry especially, but also such sectors as leather, non-metallic minerals, chemicals, tobacco, miscellaneous manufacturing, transportation equipment and printing, as well as the activities of trade,

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[23] For an example of the application of this typology of workplaces to all the industrial establishments in a county area, see Hum of Industry: Millers, Manufacturers and Artisans of Wellington County #9 in this series of research reports, pp. 38-44.

[24] For discussion of these ideas, notably the concept of "concurrent phases of capitalist growth" in which factories, manufactories and craftshops co-existed, see also Raphael Samuel, "The Workshop of the World: Steam Power and Hand Technology in Mid-Victorian Britain", History Workshop Journal 3 (1977): 6-72; H.G. Gutman, "Work, Culture and Society in Industrializing America, 1815-1919", American Historical Review 78 (1973): 531-588.

Table 12

DISTRIBUTION OF INDUSTRIAL WORKERS BY WORK ENVIRONMENTS IN CANADA, 1871:

(percentages)

		NON-POWERED BY WATER/STEAM				SUBTOTAL	POWERED BY WATER/STEAM				SUBTOTAL
SECTOR	FIRM SIZE	1-5	6-25	26-50	51+		1-5	6-25	26-50	51+	
1	Agrc services	19.4	6.9	13.8	46.1	86.2	11.1	2.8			13.9
2	Forestry	1.3	2.7	7.9	70.6	82.5		3.7	13.9		17.6
4	Mines, salt wells	0.9	2.5		19.2	22.6	2.7	23.2	20.3	31.2	77.4
5.01	Foods/beverages	27.8	12.7	4.0	1.9	46.4	29.0	13.8	4.3	6.5	53.6
5.02	Tobacco	2.8	9.7	6.3	13.7	32.5	0.5	4.3	9.0	53.7	67.5
5.03	Rubber						1.6			98.4	100.0
5.04	Leather	38.1	13.7	4.3	10.4	66.5	2.3	5.1	1.4	24.7	33.5
5.05	Textiles	34.1	2.6	0.5		37.2	12.7	20.5	9.0	20.5	62.7
5.06	Knit/hosiery	20.3	6.2	8.0		34.5		1.8	6.6	57.0	65.4
5.07	Clothing	25.5	36.5	13.8	17.9	93.7			0.4	5.7	6.1
5.08	Wood	12.3	3.5	0.5	0.1	16.4	20.1	21.8	9.8	31.9	83.6
5.09	Furniture	29.2	11.5	3.1		43.8	6.8	14.8	10.3	24.3	56.2
5.10	Paper	2.6	2.1			4.7	0.5	19.2	23.9	51.7	95.3
5.11	Printing	14.3	24.6	6.2	5.1	50.2	0.2	5.6	14.9	29.1	49.8
5.12	Primary metal	0.9	1.4		2.4	4.7	2.7	10.2	16.5	65.9	95.3
5.13	Metal fabricatg	28.1	13.7	0.9		42.7	2.2	14.6	17.6	22.9	57.3
5.14	Machinery	12.1	1.7			13.8	4.5	22.2	12.9	46.6	86.2
5.15	Transport.equpmt	30.4	22.2	8.1	11.3	72.0	1.5	3.8	3.1	19.5	28.0
5.17	Non-metal.mins	40.2	34.3	5.4	2.6	82.5	0.6	4.7	2.3	9.9	17.5
5.18	Fuels	4.0				4.0	13.2	52.7	30.0		96.0
5.19	Chemicals	57.3	18.4	1.2		76.9	2.8	10.7	4.1	5.4	23.0
5.20	Miscell.mfg	31.7	33.4	8.7		73.8	0.7	3.6	9.9	12.1	26.2
6.00	Construction	25.9	38.6	14.5	5.1	84.1	0.2	5.9	1.7	8.1	15.9
7.00	Utilities	11.1	15.9	16.7	20.1	63.8	1.1	2.5	18.4	14.2	36.2
8.00	Trade/repair	96.4	3.6			100.0					
10.00	Services	95.5	2.3		0.6	98.4	0.4	0.4	0.8		1.6
ALL INDUSTRIES		27.2	13.5	4.0	5.2	49.9	8.9	11.7	6.7	22.8	50.1

Source: compiled from CANIND71 database.

services, construction and utilities. The making of furniture illustrates the co-existence of several scales of operation in a single industry, with only eight large factories and 15 smaller factories together employing 35 per cent of all furniture workers, 120 middle-sized businesses accounting for a further 30 per cent, and 940 artisanal cabinet-makers in small workshops (most of them without steam or water power).[25]

Manufactories, not powered but with at least 26 workers, were significant workplaces in the making of clothing (31 per cent), tobacco products (25 per cent), and boots and shoes (19 per cent). Artisanal shops, without power and with five or fewer workers, were most common in food and beverages (28 per cent), clothing (25 per cent), leather working including boots and shoes (38 per cent), metal fabricating (28 per cent), and predominated in services such as blacksmiths (95 per cent). Non-powered workplaces with between 6 and 25 workers, defined by Laurie and Schmitz as sweatshops, may in some cases have been rather large artisanal craftshops. These workplaces were most common in clothing (36 per cent), but were also found in the tobacco, leather, printing, transportation equipment and miscellaneous sectors.

Apart from the largest saw mills in rural districts, factories using inanimate power and employing large workforces symbolized the industrial era and were concentrated in urban areas. But in 1871 and later, most industrial workers laboured in the smaller shops of an earlier era. A good many of Ontario's towns and villages had neither factory or manufactory. In Ontario, for example, only 67 of the 148 urban and proto-urban places defined for Ontario had at least one factory, and only 23 had at least one manufactory. In the lower reaches of the urban hierarchy, among the places with under 2,500 population, factories and especially manufactories were exceptional. Even among the 24 urban places with between 2,500 and 5,000 people, only 19 had a factory and only six a manufactory. Artisanal shops and small powered mills were still by far the most common workplaces in smaller urban centres and rural districts of Canada.

5 CANADA'S LARGEST INDUSTRIAL FIRMS

The vast majority of Canada's industrial establishments in 1871 were tiny operations. One in three of all firms reported under $500 worth of output; 44 per cent declared only one worker; and one in four businesses operated for under six months of the census year. Only 24 per cent of all industrial establishments in 1871 combined an output worth over $500, with more than one employee and operations lasting at least six months of the census year. As a kind of stratified sample of 1871 industrial businesses we consider the largest firms of the time. In a previous study, we had learned the wisdom of ranking

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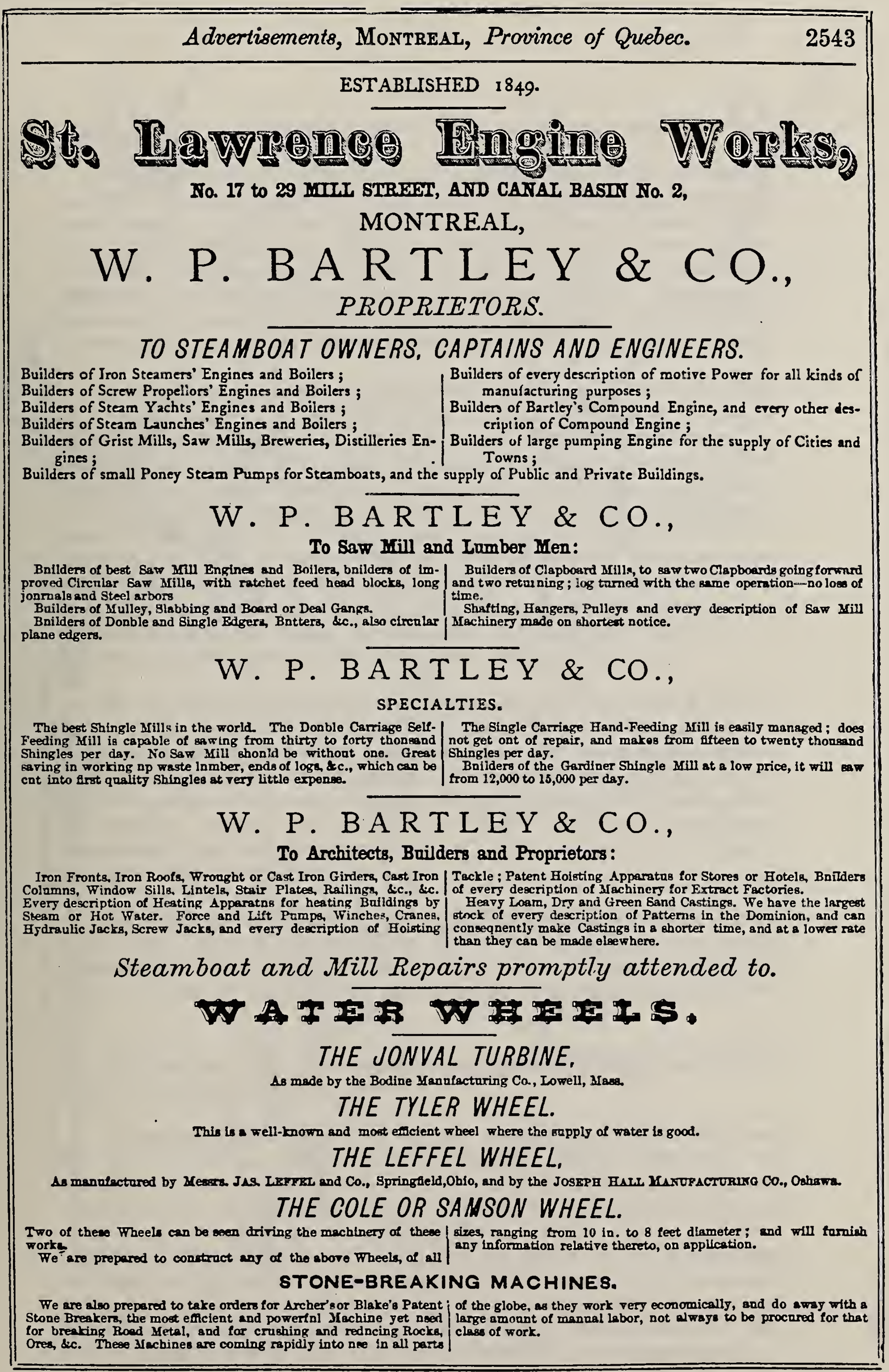
[25] For a brief discussion of the Ontario furniture industry in 1871 (and of flour mills, breweries and farm machinery works) see E. Bloomfield and G. Bloomfield, "Mills, Factories and Craftshops in Ontario, 1870: A Machine-Readable Source for Material Historians", Material History Bulletin 25 (1987): 35-47.



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Heavy Loam, Dry and Green Sand Castings. We have the largest stock of every description of Patterns in the Dominion, and can consequently make Castings in a shorter time, and at a lower rate than they can be made elsewhere.

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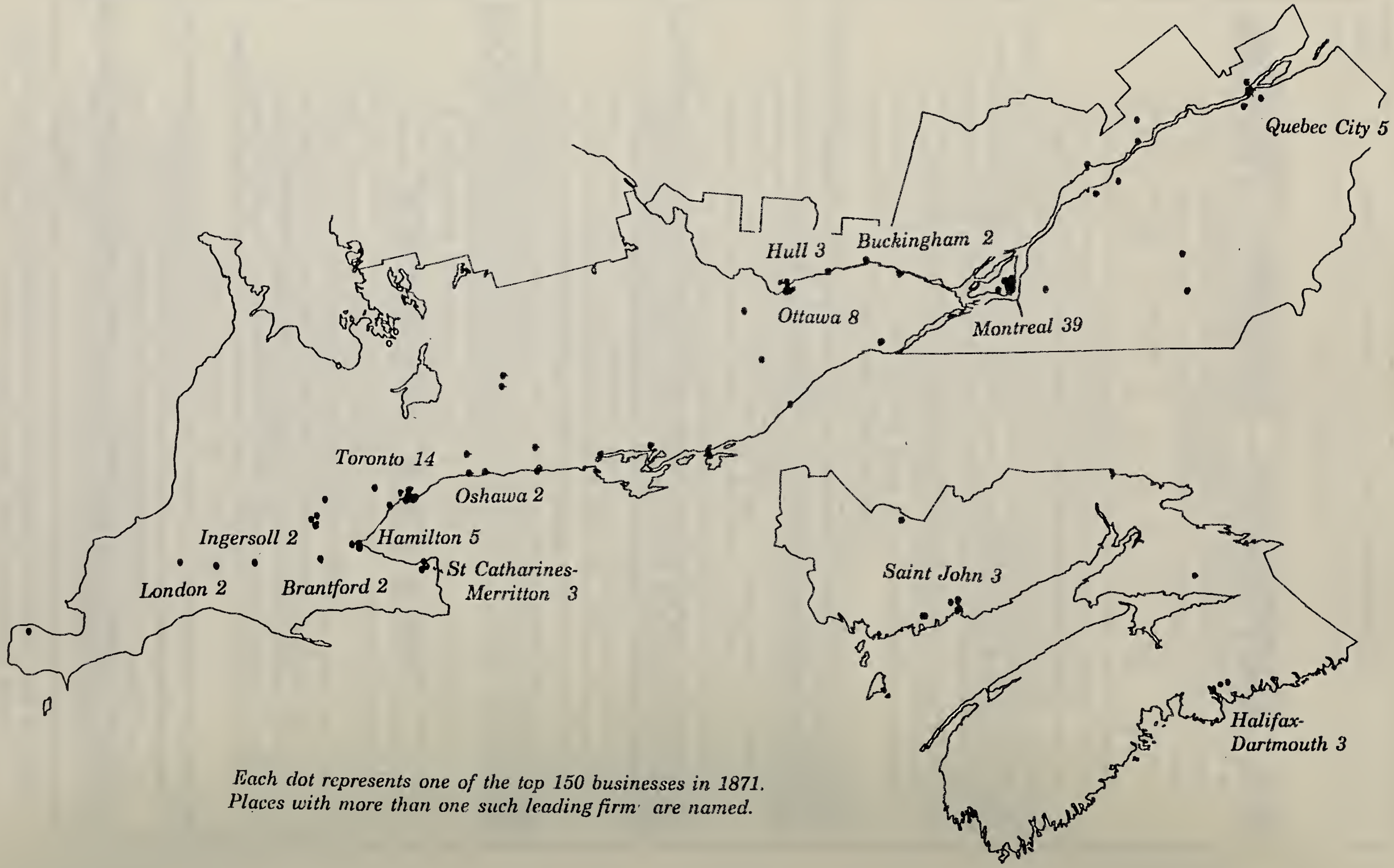
Figure 15: W.P. Bartley & Co employed 157 men and 65 boys in the St Lawrence Engine Works in Ste-Anne's Ward, Montreal and reported producing $128,175 worth of engines and assorted machinery in 1870-1.
Source: Lovell's Dominion Canadian Directory, 1871, p. 2543.

Figure 16

LOCATION OF TOP ONE PERCENT OF INDUSTRIAL BUSINESSES



Each dot represents one of the top 150 businesses in 1871.
Places with more than one such leading firm are named.

industrial firms on the basis of several measures rather than a single variable.[26]

We selected the top one per cent of all Canadian firms in 1871 for each of four different measures: number of employees, value of fixed capital investment, gross value of production and added value. We found that, in Canada in 1871, the 450 largest firms by value of output produced goods worth at least $76,000. The largest industrial employers reported at least 51 workers. The most highly capitalized firms declared fixed capital of at least $28,500. The top 450 enterprises by added value had at least $31,000 added in the process of manufacturing. In all, 856 different enterprises were identified by this method.

However, only 150 businesses were found to rank among the top one cent for all four measures; they are listed in in SIC order in Appendix A-7 and in alphabetical order in Appendix A-8.[27] They were distributed throughout the four provinces, with 67 in each of Ontario and Quebec, twelve in New Brunswick and four in Nova Scotia. A good many of the top firms were located in the largest cities, with 39 in Montreal, 14 in Toronto, five in Quebec City, three in Saint John, one in Halifax (and two others in Dartmouth), five in Hamilton, and eight in Ottawa. But as Figure 16 suggests, they were quite widely distributed through smaller urban centres and rural districts as well. In Ontario and Quebec, several towns with under 10,000 population had two or three of the largest firms. St Catharines and Hull each had three; and Ingersoll, Oshawa, Merritton and Buckingham each had two.

The 150 largest industrial firms comprised less than one third of one per cent of the businesses counted in the 1871 census. They were far outnumbered by the thousands of artisans and small craftshops -- the blacksmiths, tinsmiths, bakers, saddlers, shoemakers, tailors, milliners, weavers and knitters, coopers, carpenters, carriage and wagon makers. But they employed one in seven of all the industrial workers, and accounted for 19 per cent of the fixed capital investment, 17 per cent of the gross value of output, and nearly 18 per cent of the value added in manufacturing.

The largest industrial enterprises of 1871 identified here included quite a wide array of types of activity. There were 37 saw mills among the top 150 businesses, of which the largest was E.B. Eddy's at Hull, Quebec (Figure 17). There were also 18 boot and shoe manufacturers; nine woollen mills and nine

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[26] Industrial Leaders: the Largest Manufacturing Firms of Ontario in 1871, #8 in this series of research reports.

[27] Some businesses that are known from other evidence to have been large are not included in this list if the manuscript census information was incomplete. The census records for the workshops of the Great Western Railway in Hamilton and the Northern Railway in Toronto lack production data, which also prevented a calculation of added value. In our analysis of Ontario's largest industrial firms for Industrial Leaders, we did include these two large establishments (see note 12, page 7 of that report). For the present study, however, we did not adapt the manuscript census evidence in any way. The loss of the manuscript census records for King's Ward, Saint John, also means that several large firms could not be included in the present study.

Figure 17 CANIND71 SAMPLE RECORD

proprior: **EDDY EZRA BUTLER**		*typeest:* **SAW MILL/MATCH/PAIL FCY**	
cdid: **Q093**	*ced:* **B-4**	*cdistric:* **OTTAWA WEST**	*csd:* **HULL**
sic: **251/254**	*sec:* **5.08**	*month:* **12**	*prop:*
fixcap: **250000**	*flocap:* **331000**	*typepow:* **WATER**	*force:* **600**
empmen: **500**	*empwom:* **100**	*empboy:* **20**	*empgirl:* **140**
totemp: **760**	*wages:* **144000**	*avwage:* **15.79** *per worker/month*	
sumrawc: **400000**	*sumproc:* **661000**	*vadd:* **261000**	

rawmat1: **LOGS/LUMBER**		*rquant1:*	*rvalue1:* **300000**
rawmat2: **SULPHUR/PHOSPHORUS/LUMBER**			*rvalue2:* **40000**
rawmat3: **LUMBER/NAILS/ZINC**		*rquant3:*	*rvalue3:* **50000**
rawmat4: **N/G**		*rquant4:*	*rvalue4:* **10000**
rawmat5:	*runit5:*	*rquant5:*	*rvalue5:*
rawmat6:	*runit6:*	*rquant6:*	*rvalue6:*
rawmat7:	*runit7:*	*rquant7:*	*rvalue7:*
rawmat8:	*runit8:*	*rquant8:*	*rvalue8:*
rawmat9:	*runit9:*	*rquant9:*	*rvalue9:*
rawmat10:	*runit10:*	*rquant10:*	*rvalue10:*

prod1: **LUMBER**	*punit1:* **FT BM**	*pquant1:* **30000000**	*pvalue1:* **370000**
prod2: **WASHBOARDS**	*punit2:*	*pquant2:* **7200**	*pvalue2:*
prod3: **MATCHES**	*punit3:* **GROSS**	*pquant3:* **270000**	*pvalue3:*
prod4: **DOORS/BLINDS**	*punit4:*	*pquant4:* **5000**	*pquant4:*
prod5: **PAILS**	*punit5:*	*pquant5:* **600000**	*pvalue5:*
prod6: **TUBS**	*punit6:*	*pquant6:* **45000**	*pvalue6:* **1700**
prod7:	*punit7:*	*pquant7:*	*pvalue7:*
prod8:	*punit8:*	*pquant8:*	*pvalue8:*
prod9:	*punit9:*	*pquant9:*	*pvalue9:*
prod10:	*punit10:*	*pquant10:*	*pvalue10:*

comments: **WASHBOARDS & MATCHES TOGETHER $125000; DOORS/BLINDS/PAILS TOGETHER $149000. A VERY COMPLEX RECORD THAT COULD NOT BE DISTINGUISHED INTO FOUR SEPARATE RECORDS FOR THE MAIN PARTS OF THE WHOLE ENTERPRISE.**

engine manufacturers; six makers of agricultural implements; five furniture factories; four each of cotton mills, printers and publishers, and railway workshops; and three each of breweries, tanneries, furriers, rolling mills, stove works, and sewing machine factories. There were also two sugar refineries, two distilleries, two each in the manufacture of rafts, tobacco products, clothing, hats, paper, nails, hand tools, as well as two ship builders and two gas works. Unique firms in this list were the Canadian Rubber Company on Montreal (Figure 18), the Dartmouth Rope Walk, St Lawrence Glass Company of Montreal Parish that manufactured Flint glass, Starr Manufacturing of Halifax that made skates, and R.S. William's melodeon factory in Toronto.

Were the newer, large factories of 1871 more or less productive than the manufactories and craftshops? Laurie and Schmitz also used their Philadelphia data to test Alfred Chandler's theory that scale and mechanization did not necessarily lead to economies of scale, and that scale might indeed be a liability. The results of their analysis supported Chandler in showing that the large factory was not the efficiency leader in the mid to late nineteenth century.[28]

6 METROPOLITAN AND URBAN DOMINANCE OF INDUSTRY

How urban was urban industrial activity in 1871? Fewer than one in every five of the people of Canada lived in incorporated urban centres in 1871.[29] But the 187 such centres in the four provinces enumerated in the 1871 Census accounted for a disproportionate share of industrial activity. As set out in Table 13, 23 per cent of all Canadian industrial firms were counted in urban places, with higher proportions in Ontario and Quebec. Nearly half the industrial labour force was counted in these urban centres, with notably high proportions of the women and children who were employed in industry. Over seven in every ten of all female industrial workers were recorded in urban places. Urban firms also accounted for 38 per cent of the steam power used in industry, 57 per cent of fixed capital, 57 per cent of the gross value of output,

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[28] B. Laurie and M. Schmitz, "Manufacture and Productivity: The Making of an Industrial Base, Philadelphia, 1850-1880", in Hershberg, ed. Philadelphia: Work, Space, Family, and Group Experience in the Nineteenth Century, (New York, 1981): 43-92. For analyses of the earlier period, see also: J. Atack, "Returns to Scale in Antebellum United States Manufacturing", Explorations in Economic History 14 (1977): 337-359; and K.L. Sokoloff, "Was the Transition from the Artisanal Shop to the Nonmechanized Factory Associated with Gains in Efficiency? Evidence from the U.S. Manufacturing Censuses of 1820 and 1850", Explorations in Economic History 21 (1984): 351-382.

[29] When only incorporated urban places with a population of at least 1,000 are included, the urban proportion of the total is 18.8 per cent. If all incorporated centres are considered, there were 110 in Ontario and 74 in Quebec. Processes of municipal incorporation lagged in New Brunswick and Nova Scotia, where only Saint John, Fredericton and Halifax were incorporated. The loss of the manuscript schedules for the important King's Ward of Saint John means that the urban shares of industry in the two Maritime provinces are further understated in the CANIND71 database.

Figure 18 **CANIND71 SAMPLE RECORD**

proprior: **CANADIAN RUBBER CO** *typeest:* **RUBBER COMPANY**
cdid: **Q105** *ced:* **C-5** *cdistric:* **MONTREAL EST** *csd:* **STE-MARIE**
sic: **162** *sec:* **5.03** *month:* **8** *prop:*
fixcap: **400000** *flocap:* **150000** *typepow:* **STEAM** *force:* **210**
empmen: **120** *empwom:* **250** *empboy:* *empgirl:*
totemp: **370** *wages:* **70245** *avwage:* **23.73** *per worker/month*
sumrawc: **301513** *sumproc:* **431415** *vadd:* **129902**

rawmat1: **RUBBER** *runit1:* **LB** *rquant1:* **255000** *rvalue1:*
rawmat2: **FELT** *runit2:* **YD** *rquant2:* **17866** *rvalue2:*
rawmat3: **NETTING,COTTON** *runit3:* **LB** *rquant3:* **18025** *rvalue3:*
rawmat4: **NETTING,WOOL** *runit4:* **LB** *rquant4:* **5065** *rvalue4:*
rawmat5: **COTTON,GRAY** *runit5:* **YD** *rquant5:* **57520** *rvalue5:*
rawmat6: **BELTING,COTTON DUCK** *runit6:* **LB** *rquant6:* **22760** *rvalue6:*
rawmat7: **HOSE,DUCK** *runit7:* **LB** *rquant7:* **2730** *rvalue7:*
rawmat8: **BINDING** *runit8:* **GROSS** *rquant8:* **2800** *rvalue8:*
rawmat9: **BUCKLES** *runit9:* **GROSS** *rquant9:* **1228** *rvalue9:*
rawmat10: **BOOT WEB** *runit10:***GROSS***rquant10:* **638** *rvalue10:*
rawmat11: **SPOOL THREAD** *runit11:* **GROSS** *rquant11:* **74** *rvalue11:*
rawmat12: **SILK,MACHINE** *runit12:* **LB** *rquant12:* **269** *rvalue12:*

prod1: **SHOES,INDIA RUBBER/BOOTS,FELT**
punit1: **PR** *pquant1:* **646931** *pvalue1:* **431415**
prod2: **BELTING,MACHINE/HOSE,MACHINE/RAILROAD CAR SPRINGS**
punit2: *pquant2:* *pvalue2:*

comments: **CANNOT GIVE AGGREGATE VALUE OF MACHINE BELTING,HOSE AND RAILROAD CAR SPRINGS; INFORMATION BY FRANCIS SCHOLES, MANAGER; RAW MATERIALS INCLUDE ALSO: LAMP BLACK, 210 GROSS BUTTONS, 10000 LB SULPHUR, KEYS LYM, LITMEDGE.**

and 58 per cent of value added in manufacturing. More than two of every three of the largest industrial firms were located in urban centres. Ontario and Quebec had even larger shares, Quebec urban centres being notable for their high proportion of the provincial output and value added.

Table 13

Urban percentages of industrial activity in Canada and provinces, 1871

	CANADA	Ontario	Quebec	NB	NS
Establishments	23.0	28.4	24.5	10.6	4.2
Fixed capital	56.9	62.5	61.3	21.7	24.0
All employees	48.7	55.4	54.3	20.9	14.3
Value of output	56.9	58.8	64.6	28.8	23.6
Added value	57.9	60.4	66.6	27.9	25.4

Source: compiled from CANIND71 database.

Montreal was by far the largest city with a population of 107,225 in 1871, followed by Quebec City with 59,699 and Toronto with 56,092. Three cities had populations in the 25,000 to 30,000 range -- Halifax with 29,582, Saint John (28,805) and Hamilton (26,716). Only the Ontario cities of Ottawa (21,545) London (15,816) and Kingston (12,407) were represented in the next size-class. Towns and cities with between 5,000 and 10,000 population were Brantford, St Catharines, Guelph, Belleville, Chatham, Port Hope, Stratford and Windsor in Ontario; Trois-Rivières, Lévis and Sorel in Quebec; and Fredericton in New Brunswick. Ontario had 24 and Quebec four towns in the 2,500-5,000 range. Of the 69 small towns and villages of 1000 to 2000, Ontario had 46 to Quebec's 23, while Quebec had most of the smallest urban places with under 1000 population.

If we consider only the 20 cities and towns with at least 5,000 population, they account for only 11.7 per cent of the whole population of the four provinces and under 11 per cent of the industrial establishments. But they had much larger shares of other measures of industrial activity. As Table 14 shows, one in three of all industrial workers was recorded in these larger urban places, and over 40 per cent of all fixed capital investment, gross value of output and value added.

Table 14
Percentages of industrial activity
in size-classes of urban centre and in rural Canada, 1871

	size-class of urban centre					
	100,000+	25,000-60,000	5,000-22,000	Under 5,000	Rural	TOTAL
Number of centres	1	5	14	167		
Population %	2.9	5.4	3.4	7.1	81.2	100.0
Establishments %	2.5	4.4	3.9	12.2	77.0	100.0
Fixed capital %	13.3	20.2	9.2	14.2	43.1	100.0
Employees %	11.2	14.0	8.8	14.7	51.3	100.0
Value of output %	15.0	15.4	9.8	16.7	43.1	100.0
Added value %	14.4	16.9	10.1	16.5	42.1	100.0

Source: compiled from CANIND71 database.

Urban industrial establishments were generally larger and more productive than rural ones. The average urban Canadian firm in 1871 employed over nine workers compared with under three for rural establishments. Urban firms averaged $4,820 in fixed capital investment while the mean for rural firms was only $1,090. The average value added in manufacturing by an urban industrial worker was $594, compared with only $411 for a rural worker. Urban workers also earned more, an average $261.09 for 1871, while the mean for rural workers was only $169.63. Of course, these generalized statistics mask wide variations in the gender and age composition of the labour force and in the seasonality of employment, as well as in the scale of operation of industrial enterprises. Nearly half of all rural units operated for less than nine months of the census year, compared with only 10.5 per cent of the urban businesses.

The degree of urban concentration of industrial activity varied by sector. Over 75 per cent of tobacco or rubber products, primary metals, printing, miscellaneous products, clothing, furniture and metal fabricating, machinery and paper, as well as utilities and construction, were located in urban centres. The lower urban shares of the food, textile, wood and non-metallic mineral sectors reflect the large numbers of grist and flour mills, cheese factories, woollen mills, carding and fulling mills, sawmills and lime kilns in rural areas. On the whole, we may distinguish those industry groups more characteristically found in rural areas as **processing** or **primary** manufacturing, while the industries concentrated in urban areas may be generally described as **fabricating** or **secondary** manufacturing. The distinction is nicely illustrated in the contrasting distribution patterns of sawmills and furniture-makers in 1871. Sawmills that processed wood products close to the forest sources were more characteristically found in rural areas. Furniture factories, where the sawn lumber was fabricated by more intensive application of labour into goods for consumers, were more often located in the urban centres.

Yet even in those industry groups or sectors that were overwhelmingly rural, it is notable that the establishments located in urban centres were more productive than those in rural areas. A preliminary analysis of the patterns in Ontario in 1871 has shown that urban establishments were more productive than rural units in every sector except mining and quarries.[30] If all industry groups are considered together, urban firms were twice as productive as the norm. Urban saw mills, textile mills, lime kilns, machinery and chemical works and transportation equipment businesses were especially more productive than rural units of the same industry group.

Industrial activity was far more important to some urban communities than to others. Some were veritable "hives of industry", a phrase used with pride by various Ontario towns and villages in the later nineteenth century. One simple measure of the significance of industry to a community is the percentage of the total population of a city, town or village that was employed in industrial activity. For all 187 urban centres defined in the four provinces, the mean proportion of the urban population that was employed in industry was 13.8 per cent. For its 110 centres in 1871, the mean percentage of the Ontario urban population employed in industry was 14.7, but this value ranged widely in every size-class, but especially among the smaller urban centres.[31]

Montreal itself was both the commercial metropolis and the dominant industrial city of Canada, with more than one in every five (20.7 per cent) of its total population employed in industry. Among Canada's cities with over 10,000 population, Montreal was exceeded only by Hamilton (21.6 per cent of its people in industry) and most nearly approached by Toronto (18.9 per cent), Ottawa (14.8 per cent) and London (14.6 per cent). If we adjust for the loss of the manuscript schedules for King's Ward in Saint John, New Brunswick, that city had 14.2 per cent of its population employed in industry. Towns of 5,000 to 10,000 people and above-average employment in industry were St Catharines (17.9), Guelph (16.6), Brockville (16.6), Brantford (15.5), Lévis (15.4) and Trois-Rivières (14.8).

Smaller towns and villages dominated by industry were far more common in Ontario than in Quebec. In a handful of Ontario industrial villages, more than three in ten of the population worked in factories, mills or craftshops. The highest percentages were in Deseronto, Merritton, Hespeler, Portsmouth and Rockland, almost all of them with populations of well under 1,000 in 1871. Three slightly larger villages in eastern Ontario, Almonte, Carleton Place and Smiths Falls, which had populations between 1,150 and 2,100, were almost as highly industrialized, with at least one in every four of their people employed in industry. At least one in every five of the people of the somewhat larger towns of Oshawa, Dundas and Galt worked in industrial establishments.

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[30] The Ontario Urban System at the Onset of the Industrial Era, #3 in the CANIND71 series of research reports (pp. 7,10).

[31] In their analysis of specialized industrial cities in the United States, Perksy and Moses used the very similar criterion of 15 per cent of the city population employed in manufacturing, together with a concentration of at least 25 per cent of industrial workers in a single industry. J. Perksy and R. Moses, "Specialized Industrial Cities of the United States, 1860-1930", Journal of Historical Geography 10 (1984): 37-51.

Only 11 such places in Quebec had above-average proportions of their population employed in industry compared with 43 in Ontario. The tiny Quebec village of New Glasgow had 35 per cent of its 168 people employed in industry but no other Quebec towns or villages had proportions as high as 20 per cent. The next highest were Chicoutimi (19.9), Lauzon (18.9), Danville (18.8), Sherbrooke (17.8), St Jean (16.9), and Buckingham (16.3).

A closer look at some of Canada's industrial communities reveals the presence of leading enterprises or clusters of firms in particular industrial sectors. The largest group of such towns specialized in the primary processing of wood products, each being dominated by one or more large sawmills. Ottawa had six sawmills employing at least 50 workers and producing $100,000 each, and there were single, very large mills in smaller communities such as Carleton Place, Deseronto, Hawkesbury, Port Perry, Trenton, Trenton, Deseronto, Rockland, Barrie, Goderich, Collingwood, Arnprior, Orillia and Stayner. Examples of notable sawmilling towns in Quebec were Buckingham, Chicoutimi and Trois-Rivières.

Eight Ontario towns specialized in textiles -- Almonte had five woollen mills, Hespeler three, and Lanark, Campbellford and New Edinburgh and Preston one each. Merritton had two cotton mills and a paper mill and Paris was dominated by knitting mills, while Sherbrooke in Quebec had three woollen mills.

Perhaps more remarkable was the specialization of significant numbers of Ontario towns in more fabricated forms of industrial activity. Several towns specialized in the "metal trades" of various kinds. Oshawa, for example, had over 60 per cent of its 732 industrial workers employed by two firms -- the Joseph Hall Company that made steam engines, boilers and farm machinery, and William H. Gibbs' furniture factory. Gananoque was distinctive for several firms in metal fabricating, machinery and transportation equipment. One made rivets and castings; another nails and hinges; three manufactured tools, including shovels, forks and files; two made agricultural implements; and three made parts for carriages and wagons. The village of Smiths Falls had two notable foundry enterprises making agricultural implements, as did the town of Ingersoll, while Mitchell, Newcastle, Aurora and Brampton were each dominated by a single enterprise in this sector. Guelph and Fergus were notable for the manufacture of sewing machines. Port Hope, St Marys and Picton had measurable specializations in clothing, Bowmanville and Berlin in furniture, and Brockville in stoves. Three towns specialized in the making of transportation equipment: Brantford (railways), Oakville (carriages) and Port Dalhousie (boat-building).[32]

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[32] The design of the CANIND71 database permits one to relate the aggregations of data for industry groups and sectors to the identity and characteristics of specific enterprises. For a demonstration of this potential, for the 60 largest industrial businesses in Ontario in 1871, see Elizabeth Bloomfield and G.T. Bloomfield, Industrial Leaders: The Largest Manufacturing Firms in

How evenly were the various major classes of industrial activity distributed through the urban system? Did problems of transportation and distribution mean that every locality had its own producers? To what extent had local areas of specialization in particular manufactures developed by 1871? Analysis of the industrial structure of Canadian urban centres does not support any general stereotype of self-sufficient communities, each producing goods for its own local needs in geographically limited areas without competition. Clearly, it was possible for local entrepreneurs to have developed by 1871 some significant local specialization in particular product lines, and to supply more than their immediate hinterlands.

Table 15

Metropolitan percentages of industrial activity in Canada and provinces, 1871

	MONTREAL **% CANADA**	Montreal % Quebec	Toronto % Ontario	St John % NB*	Halifax % NS
Population	2.9	9.0	3.5	10.1	7.6
Establishments	2.5	8.0	2.6	13.1	4.2
Fixed capital	13.3	39.3	23.7	21.4	24.3
All employees	11.2	31.9	11.1	22.1	14.3
Value of output	15.0	42.7	12.9	30.9	23.6
Added value	14.4	43.0	14.7	30.6	25.4

Source: compiled from CANIND71 database.

Note: * Figures for Saint John and New Brunswick have been adjusted, using published census totals, to compensate for the loss of all the manuscript schedules for King's Ward.

But how far had the process of spatial concentration gone? How concentrated were various classes of industry in the largest cities of Ontario in 1871? To what extent may we explain the distribution of different types of industry in terms of metropolitan dominance? Table 15 shows what proportion of the industrial activity of each province was concentrated in its largest city. In each case, the large city's share of industrial capital, employment and

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Ontario, 1871, #8 in this series of research reports. The relevance of the 1871 database to community studies, with special reference to Hespeler, Carleton Place and Oshawa, is discussed in Elizabeth Bloomfield, "Using the 1871 Census Manuscript Schedules: A Machine-Readable Source for Social Historians", Histoire sociale 19 (1986): 427-441.

production was far larger than its share of provincial population and numbers of firms. Montreal was far more dominant in Quebec, accounting for nearly 43 per cent of that province's industrial production in 1871, than any of the other large cities were of their provincial hinterlands. Saint John and Halifax had generally similar middling shares of their provincial activity, while Toronto was notably less dominant in Ontario which had a much more fully developed hierarchy of urban centres. The figures provide evidence that, as well as dominating the province of Quebec, Montreal was the national metropolis for commercial and industrial activity. The wider range of industry types in Canada's largest cities, in contrast to the specialization of some smaller communities, is illustrated in the Appendix Tables A-9 to A-12 for Montreal, Toronto and Quebec City.

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The CANIND71 database offers enormous scope for more research on particular enterprises, industry types and regions in Canada around 1870. This report has simply surveyed the range of variables in the database, stressing those that were not previously available and discussing some of the themes and concepts that might be developed in more depth. The structure of the database, especially its systems of coding each establishment for its exact geographical location and industry type, allows us to reconstruct the patterns of industrial activity in great detail and also to generalize these for larger areas.

After creating the CANIND71 database and manuals (in English and French versions), the Canadian Industry in 1871 Project is continuing with several further initiatives that will help other researchers. The boundaries of Canadian census areas are being digitized, or encoded in machine-readable format, and other procedures are being developed so that it will be possible to map the spatial patterns of industry from data summed out of the CANIND71 database. Some preliminary maps are included in this report. In addition, other statistical information that was published for census areas in the 1870s is being made machine-readable. It will thus become possible to analyze and map demographic, socioeconomic, agricultural and other economic variables in relation to the CANIND71 data.

APPENDICES

Abbreviated code names for variables in the CANIND71 database are used in various tables in this report. A brief explanation of each code name follows:

AVWAGE:	Average monthly wage per worker in a firm, place or type of industry.
CDID:	Census district number used in 1871 census.
CDISTRIC:	Census district name used in 1871 census.
CED:	Census enumerator's division, a small part of a census district.
COMMENTS:	Additional remarks or comments for a firm entered in manuscript schedule.
EMPBOY:	Boys (males under 16 years) employed in industrial activity.
EMPGIRL:	Girls employed (females under 16 years) in industrial activity.
EMPMEN:	Men (males over 16 years) employed in industrial activity.
EMPWOM:	Women (females over 16 years) employed in industrial activity.
FIXCAP:	Value of fixed capital reported by proprietors.
FLOCAP:	Value of floating or working capital reported by proprietors.
FORCE:	Units (in "horse power" equivalents) of non-manual power reported by proprietors.
MONTH:	Number of working months in year.
OBSERV:	Observation, unit or record in a database; in the case of CANIND71 means individual industrial establishment.
PROD1:	Named type of product, first to Nth, as numbered.
PROPRIOR:	Name of proprietor as stated in census schedules.
PQUANT1:	Quantity of named product, first to Nth, as numbered.
PUNIT1:	Unit of measurement of named product, first to Nth, as numbered.
PVALUE1:	Value of named product, first to Nth, as numbered
RAWMAT1:	Named type of raw material, first to Nth, as numbered.
RQUANT1:	Quantity of named raw material, first to Nth, as numbered.
RUNIT1:	Unit of measurement of named raw material, first to Nth, as numbered.
RVALUE1:	Value of named raw material, first to Nth, as numbered.
SEC:	Major industry group, derived from combinations of SIC codes.
SIC:	Standard Industrial Classification.
SUMPROC:	Value of industrial production ($).
SUMRAWC:	Value of raw materials used in industry ($).
TOTEMP:	Total number of employees, the sum of EMPMEN, EMPWOM, EMPBOY and EMPGIRL.
TYPEEST:	Type of establishment as stated by enumerator in census schedules.
TYPEPOW:	Type of power reported: steam, water, horse, W/S (water/steam).
VADD:	Value added in manufacturing ($) = production $ - raw materials $.
WAGES:	Wages paid to industrial workers ($).

Appendix Table A-1

Standard Industrial Classification (1970) adapted for 1871: short list of codes with at least 50 occurrences in CANIND71 database

101-P	Pork Curing/Packing	Salaison de porc
102	Fish Curing	Salaison de poisson
104	Cheese Factories	Fromageries
105	Flour/Grist Mill	Farine, Moulin à
105-O	Oatmeal Mill	Avoine, Moulin d'
107	Bakeries	Boulangeries
108-C	Confectionery	Confiserie
109-B	Brewery	Brasserie
109-S	Aerated Water	Eaux gazeuses
153	Tobacco Working	Tabac, Manufacture de
172	Tanneries	Tanneries
174	Boots/Shoes	Bottes/Souliers
179-S	Saddle/Harness Making	Selles
182	Woolen Cloth Factories	Drap, Fabriques de
182-W	Weaver	Tisserand
189-W	Carding/Fulling Mills	Carder/fouler, Moulins à
239-K	Stockings/Mittens/Hand Knitter	Bas/Mitaines/Tricoteur
242	Clothing	Habillements
243	Tailors/Clothiers	Habillements pour hommes
246	Furrier/Hatter	Pelleterie/Chapellerie
249-M	Milliner	Modiste
251	Saw Mill	Moulin à scie
251-S	Shingle Making	Bardeaux, Confection de
254	Sashes/Doors/Blinds	Portes/Fenêtres
256	Basket Making	Vanneries
259	Wood Products, Misc	Produits de bois, divers
259-C	Cooperage	Tonnelerie
259-W	Wood Turning Establishments	Tours à bois
261	Cabinets/Furniture	Meublerie
286	Printing office	Imprimerie
287-B	Book Binding	Reliure
289	Printing/Publishing incl newspaprs	Imprimerie/Publication de
294	Foundry/Castings	Fonderie/Fonte
304-T	Tinsmith	Ferblantier
306	Agricultural Hand Tools	Outils agricoles manuels
306-T	Axes	Haches
307-S	Stoves	Poêles
309	Metal Fabricating, Misc	Fabrication de métaux
311	Agricultural Implements	Instruments aratoires
315	Machinery, Misc	Machinerie/Équipement
315-H	Spinning Wheels	Rouets
315-P	Pumps	Pompes
327	Ship Yards	Navires, Construction de
327-M	Ship Material	Apparaux de navire
328	Boat Building	Chaloupes, Construction
329	Carriage Making	Carrosserie
329-P	Wheels (* and other parts)	Roues
351-B	Brick/Tile Making	Briqueterie/Tuilerie
351-P	Pottery	Poterie
353	Stone/Marble Establishments	Marbrerie
358-L	Lime Kilns	Fours à chaux
365	Oil Refineries	Épuration de l'huile
374	Drugs	Drogues
376	Soap/Candle Making	Savonneries/Chandelleries
378-P	Pot/Pearl Asheries	Potasseries
392	Jeweler/Watchmaker	Bijoutier/Horloger
421-C	Carpenter/Joiner (buildings)	Charpentier (bâtiments)
421-D	Painter/Glazier	Peintre en bâtiments
893	Photographic galleries	Photographies
896	Blacksmithing	Forges

Appendix Table A-2

Major Industry Groups/Grands groupes de l'industrie (SECs)

Major Group SEC Grand groupe SEC		SIC codes
Division 1	Agricultural Services/Services agricoles	021-029
Division 2	Forestry/L'exploitation forestière	031-039
Division 4	Mines, Quarries, Oil and Salt Wells/ Industries des mines	051-099
Division 5	**Manufacturing Industries/Industries Manufacturières**	
5.01	Food and Beverage Industries/Industries des aliments et boissons	101-109
5.02	Tobacco Products/Industries du tabac	151-159
5.04	Leather Industries/Industries du cuir	171-179
5.05	Textile Industries/Industries textiles	181-189
5.06	Knitting Mills/Bonneterie	231-239
5.07	Clothing Industries/Industries de l'habillement	241-249
5.08	Wood Industries/Industries du bois	251-259
5.09	Furniture Industries/Industries du meuble	261-269
5.10	Paper Industries/Industries du papier	271-279
5.11	Printing and Publishing/Imprimerie et édition	281-289
5.12	Primary Metal Industries/Première transformation des métaux	291-299
5.13	Metal Fabricating Industries/Fabrication de produits en métal	301-309
5.14	Machinery Industries/Industries de la machinerie	311-319
5.15	Transportation Equipment/Industries du matériel de transport	321-329
5.17	Non-metallic Mineral Products/Industries des produits minéraux non métall.	351-359
5.18	Petroleum and Coal Products/Industries des produits raffinés du pétrole et du charbon	361-369
5.19	Chemical Industries/Industries chimiques	371-379
5.20	Miscellaneous Manufacturing/Autres industries manufacturières	391-399
Division 6	Construction Industry/Industries de la construction	401-499
Division 7	Gas and Water Utilities/Industries de services publics	572-579
Division 8	Trade (incl repair)/Commerce de gros (incl réparations)	602-699
Division 10	Personal and business services/Industries des services	801-899

Appendix Table A-3

CANADA: INDUSTRIAL STRUCTURE BY BASIC SIC CODES, 1871

SIC	OBSERV	FORCE	FIXCAP	FLOCAP	EMPMEN	EMPWOM	EMPBOY	EMPGIRL	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
021	44	122	44312	34767	212	4	1	.	217	17174	180875	263652	80707
031	14	321	394100	1091175	507	.	39	1	547	143482	1451750	1858630	409930
052	23	397	528700	47164	313	.	15	.	328	103984	32712	479619	227416
058	2	22	180000	36000	61	.	.	.	61	19000	32750	50400	36400
059	3	189	620000	90000	199	.	39	.	238	90404	30000	185142	26642
061	4	320	110700	8300	160	.	24	.	184	66440	52000	65500	12000
072	3	60	40000	30000	280	.	12	.	292	19500	1500	29000	2500
079	19	493	212100	91500	186	7	3	1	197	62780	48285	330640	282355
083	5	.	15260	5126	72	.	.	.	72	18954	1210	23526	22190
087	1	1	5000	1000	10	.	.	.	10	1500	.	2625	.
101-P	277	129	407554	1293086	881	47	41	4	973	167748	3145831	4198581	1039850
101-T	2	.	13050	600	4	.	.	.	4	650	14500	16200	1700
102	186	30	168507	212891	935	132	252	30	1349	126000	308421	578486	270065
103	12	8	49570	61388	45	12	7	3	67	14406	87839	184112	96273
104	360	82	419434	284289	569	366	60	32	1027	122018	1465687	1839909	356213
105	2236	50510	9845234	5205685	4747	29	201	106	5083	1198562	32166125	38456597	6186262
105-O	56	847	152843	49975	111	.	6	.	117	20052	355066	450552	95486
107	799	101	750927	749259	1766	115	151	17	2049	510567	4170801	5809468	1640207
108	16	58	144200	58700	53	10	15	1	79	23358	148810	293460	143050
108-B	3	18	9430	9700	10	4	4	.	18	4914	14000	27700	13700
108-C	125	69	256251	249446	406	89	85	12	592	135043	661161	1093708	431547
108-I	5	1	85600	23650	19	.	1	.	20	4260	1705	37600	495
108-L	3	86	24800	10060	26	.	.	.	26	2480	58320	74852	16532
108-M	5	10	105000	190000	29	.	2	.	31	9246	134446	203911	69465
108-R	41	230	427282	654745	420	.	19	.	439	119652	3718996	4138726	419196
108-S	5	150	121000	92250	56	1	15	.	72	27100	101150	209184	108034
109-B	132	660	1785440	1234870	931	18	21	3	973	303956	1161284	2826118	1663834
109-C	49	169	11649	2612	93	.	12	.	105	4890	18941	40956	22015
—109-D	21	793	668500	642748	426	.	4	.	430	169933	1156071	3899460	2743389
109-S	60	26	248185	199555	234	18	59	8	319	72519	373370	708568	335198
109-W	21	9	101145	21260	39	6	14	3	62	8854	12689	43225	30536
153	76	312	539775	806889	1001	483	459	402	2345	389035	1193775	2422166	1228391
162	4	316	459000	177000	184	315	3	.	502	83798	348202	500615	152413
172	1145	4083	2717181	2849778	4026	81	185	14	4306	1045516	5777949	9309261	3542432
174	4212	558	3217488	5095751	12895	4100	1056	659	18710	4078184	7612487	15793881	7883971
174-F	1	1	1000	4000	6	2	.	.	8	1800	2050	6000	3950
175	22	.	9050	21596	30	58	4	9	101	13896	23010	53958	30948
179	21	153	84985	111679	100	103	6	88	297	42254	178381	301080	121519
179-L	7	95	18100	17450	53	1	6	.	60	18954	8816	39907	31091
179-S	1029	38	558049	627012	2385	17	175	5	2582	581715	1027029	2306217	1270088
179-T	23	.	39325	57530	130	11	20	.	161	44730	125410	233320	107910
179-W	5	8	8165	15130	20	20	.	.	40	8435	19178	32310	13132
181	8	670	609500	196200	131	292	102	170	695	126108	441375	751783	310408
182	246	5835	2661339	2218181	1863	1423	472	328	4086	864962	2972567	5262026	2119789
182-S	46	.	272	272	1	45	.	.	46	351	563	1144	490
182-W	2839	2	87333	18594	877	2375	44	202	3498	184252	537314	1006841	418201
184	24	315	191190	195550	208	42	107	22	379	67385	494389	677102	182713
185	1	.	70	70	4	4	.	.	8	150	150	300	150
186	5	.	2885	3520	3	35	.	.	38	1970	5190	8770	3580
187	41	.	89815	89240	176	19	22	.	217	58788	598705	746450	147745
189	9	20	45050	9825	5	23	1	5	34	5070	10725	21859	11134

CANADA: INDUSTRIAL STRUCTURE BY BASIC SIC CODES, 1871

SIC	OBSERV	FORCE	FIXCAP	FLOCAP	EMPMEN	EMPWOM	EMPBOY	EMPGIRL	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
189-D	28	75	22800	9229	52	16	9	4	81	17339	46155	90805	44650
189-F	37	447	110482	120789	359	69	107	34	569	83455	125715	347813	212898
189-S	3	1	1055	1110	4	2	1	.	7	1500	1150	3900	2750
189-W	671	5585	834472	109919	972	162	126	33	1293	153783	1885000	2371697	471569
239	7	198	88800	147800	85	251	22	15	373	65300	189380	363400	174020
239-K	109	.	6278	5472	11	173	1	3	188	6765	7349	16059	8701
242	905	.	800767	1259659	1899	3384	169	342	5794	1026114	2701026	4675166	1907728
243	737	8	950311	1373960	1396	3810	94	365	5665	844336	2684483	4545658	1834885
244	455	.	179619	282961	56	1576	22	179	1833	189886	764410	1220318	429891
245	10	.	6399	1905	1	38	1	6	46	3550	26425	36600	10175
246	91	14	1031768	767485	388	874	35	99	1396	286581	1370750	2501662	1122912
248	3	.	500	750	.	9	.	.	9	1010	1300	4900	1700
249	3	.	4000	20	32	23	.	.	55	3280	9580	21150	11570
249-H	40	105	377748	203646	164	655	28	60	907	140590	383069	781786	398530
249-M	323	.	254699	301352	22	1197	10	133	1362	138326	560339	948895	377044
251	5426	110867	16519147	15566179	33706	243	2933	179	37061	6351546	16783855	30984281	14026940
251-S	1471	5660	445887	243599	2556	39	558	30	3183	268363	340031	896737	551403
252	2	6	3600	1400	4	.	1	.	5	700	620	5000	4380
254	515	2723	821127	671774	2769	16	248	2	3035	877233	1643872	3243817	1589439
256	144	377	81975	42527	320	108	65	13	506	75916	115560	293405	175735
258	41	10	46453	22645	77	4	7	.	88	23208	40905	97216	55511
259	931	402	251770	175336	1584	4	71	.	1659	320431	236022	782835	535843
259-C	1647	659	453677	478565	3128	7	215	3	3353	661615	684879	1775887	1080749
259-G	22	.	12040	7305	89	1	10	.	100	20689	14837	60210	45373
259-K	3	8	83005	31005	17	7	6	.	30	7206	27006	37418	10412
259-W	55	325	33870	14213	120	1	16	.	137	30998	20762	84047	58025
261	1043	2611	2098824	1619420	4143	204	341	18	4706	1215952	1414108	3726611	2306663
266	44	9	104820	106215	156	12	44	3	215	63859	126172	280153	152481
271	19	1735	583900	350000	462	185	26	26	699	166207	441749	953331	511582
272	2	.	5200	3000	7	.	.	.	7	1800	5800	9422	3622
273	15	108	29450	38222	32	122	10	52	216	26510	83726	165220	81494
274	5	69	81000	115200	26	87	16	14	143	43080	143500	243000	99500
286	73	75	465850	238670	504	180	159	53	896	235564	260748	719130	458782
286-B	1	.	100000	50000	40	34	4	4	82	35000	20000	60000	40000
287	3	.	11600	16000	14	.	2	.	16	4536	5900	19900	14000
287-B	49	2	153325	173781	199	161	42	61	463	93770	204003	396861	193908
287-E	16	20	121270	44450	101	15	19	.	135	53150	38650	138800	100150
289	233	290	1751400	659937	2030	171	581	25	2807	996208	1079855	2908422	1829367
291	5	389	412000	173000	708	.	28	.	736	130000	38725	253300	214575
291-R	4	1000	420000	320000	630	.	115	2	747	237000	1037000	1650000	613000
294	66	754	519080	410455	915	4	103	2	1024	305197	284533	917403	630500
297	15	149	171300	116210	377	3	43	.	423	127248	102910	283677	180767
298-P	2	.	30000	19300	38	15	16	10	79	22500	15875	57000	41125
298-T	1	25	50867	150000	25	.	3	.	28	5500	93000	117317	24317
301	20	89	117100	79475	236	.	34	.	270	97839	176820	341950	165130
302	1	10	8000	4000	16	.	1	.	17	5200	10000	16000	6000
303	5	9	14680	25050	55	.	5	.	60	12810	21628	55160	33532
304	6	12	69100	70400	95	5	1	.	101	37588	69760	166690	96930
304-T	784	11	742162	748198	2033	49	247	14	2343	549873	1092124	2286088	1189814
305	13	63	74400	37460	78	.	32	.	110	29842	68905	163595	86690
305-N	17	927	463400	309705	431	20	94	4	549	163990	634436	967130	332694

CANADA: INDUSTRIAL STRUCTURE BY BASIC SIC CODES, 1871

SIC	OBSERV	FORCE	FIXCAP	FLOCAP	EMPMEN	EMPWOM	EMPBOY	EMPGIRL	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
306	91	1183	390365	311230	609	15	44	6	674	218072	223728	637060	413055
306-C	6	54	21250	16185	30	.	5	.	35	10300	14210	39520	25310
306-S	13	164	112066	264600	147	.	17	3	167	60400	116545	242573	125878
306-T	55	681	132105	163300	281	.	11	1	293	100281	104345	330428	224531
307-S	85	887	753670	827149	1726	2	137	.	1865	609833	787601	2188079	1400478
308	10	54	21350	10408	37	1	1	.	39	11815	6808	21158	14350
309	280	148	301725	264355	797	2	94	1	894	237418	274844	799034	524540
309-C	1	28	24775	40000	25	.	5	.	30	1800	48000	80000	32000
309-S	12	58	59730	44600	193	.	7	.	200	53564	52845	155635	102790
311	553	3028	1652020	1643514	3451	14	161	.	3626	1111128	1126199	3528398	2379109
315	129	1033	793100	1953081	1268	4	76	2	1350	457724	438268	1798666	1358548
315-E	34	941	1113380	1175403	1943	.	153	3	2099	701909	552710	2094583	1541873
315-H	84	64	16881	7607	112	2	6	.	120	16753	4506	39227	34321
315-M	3	53	42000	38320	108	.	.	.	108	40400	19440	83000	63560
315-P	168	282	118964	59352	286	2	8	.	296	66225	38063	203233	164070
315-S	20	247	439900	334700	946	16	185	.	1147	419301	335574	1337895	1002321
318	7	46	29000	24000	47	.	11	.	58	18380	23870	85750	61880
326	34	546	7738980	231170	3323	44	27	.	3394	1402729	1200521	2132297	929712
327	288	476	1201949	2505042	5922	12	158	2	6094	1518616	1773711	4206194	2540933
327-M	70	344	149595	249370	320	2	43	.	365	96499	158715	341940	183225
328	163	.	41897	25244	352	1	23	.	376	65610	60716	146828	86112
329	2876	1328	1908414	1489063	7832	40	335	5	8212	1873987	1473162	5026046	3517649
329-P	329	442	259276	206295	848	2	60	.	910	231240	243811	722849	479338
351-B	436	657	413846	285740	2583	22	390	44	3039	363663	119531	1015565	720088
351-C	1	.	2500	10000	5	3	.	8	16	4500	7970	18000	10030
351-P	80	79	113948	55886	291	2	40	.	333	75208	43110	290867	242557
352	8	116	56000	22400	68	.	.	.	68	15500	9880	51600	25420
353	174	119	199940	345726	1061	3	53	.	1117	358279	365727	979860	614083
354	1	.	400	75	1	.	1	.	2	500	1056	2816	1760
356	7	34	137120	46600	242	9	77	.	328	110860	110275	313133	202858
357	36	101	64609	24380	336	2	14	.	352	58191	6020	87145	39070
358-L	1027	54	131410	108496	1979	6	83	5	2073	151683	115013	506972	384100
359	3	43	9600	4000	23	.	1	.	24	5400	37700	58375	20675
359-B	4	125	112000	10600	51	.	14	.	65	17735	19000	32318	15318
359-P	23	620	174950	41880	273	.	22	.	295	65594	79429	193704	114275
365	50	680	540955	552772	406	4	36	.	446	187510	1334797	2883484	1548687
372	4	13	11800	6100	9	.	.	2	11	2100	7220	11205	3985
374	51	18	283900	284125	132	49	28	7	216	71206	402813	730985	328072
375	16	289	158010	214235	107	4	5	.	116	36156	304305	449800	145495
376	72	155	322121	378082	314	18	11	4	347	98941	1050168	1402163	351995
377	4	.	5200	11000	10	4	10	.	24	3150	18300	30600	12300
378	2	10	35000	11000	9	.	.	.	9	3000	8850	16000	7150
378-P	588	14	164539	133061	956	4	52	1	1013	119491	226726	514995	288914
379	1	.	50	50	1	.	.	.	1	20	24	150	126
379-B	4	.	5000	3600	8	.	5	5	18	1494	5395	14065	8670
379-C	10	55	211300	80650	52	7	4	7	70	25020	107785	262000	114215
379-F	1	8	3000	1000	3	3	.	.	6	1000	100	1200	1100
379-G	10	23	47300	13170	37	5	15	.	57	11135	27310	67200	39890
379-H	72	.	4293	726	78	.	5	.	83	5279	5167	15472	10305
379-I	1	.	400	.	1	.	.	.	1	30	150	550	400
379-M	24	107	30096	40635	58	96	52	129	335	32801	38467	104382	65615

CANADA: INDUSTRIAL STRUCTURE BY BASIC SIC CODES, 1871

SIC	OBSERV	FORCE	FIXCAP	FLOCAP	EMPMEN	EMPWOM	EMPBOY	EMPGIRL	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
379-P	3	211	94000	21000	22	.	.	.	22	10175	54600	124000	69400
379-T	1	.	3000	5000	3	.	.	.	3	1800	14000	79000	65000
391	32	1	35490	35405	64	2	2	.	68	25070	17130	74355	56625
391-M	3	.	11210	10150	10	.	1	.	11	4710	1550	11600	10050
391-S	3	.	9400	1700	8	3	2	2	15	3553	4370	11520	7150
392	124	.	203076	144449	328	4	52	4	388	119947	151688	407619	247231
393	7	7	4456	4220	13	3	6	.	22	5475	4003	16075	12072
393-B	1	.	8000	9000	6	.	.	.	6	2200	9000	16000	7000
393-C	1	.	4000	1000	2	.	.	.	2	400	100	2000	1900
393-F	3	5	680	800	4	.	.	.	4	1700	170	2911	2741
393-S	1	60	45000	55000	45	3	25	.	73	30000	35000	90000	55000
399	31	29	48127	24347	58	41	11	3	113	23889	43846	96616	40722
399-A	2	12	9000	7200	7	14	6	10	37	5000	4500	11500	7000
399-B	105	68	144199	154440	397	75	74	8	554	122845	214810	528502	298792
399-E	4	.	22050	26200	21	.	3	.	24	6680	14100	43300	26800
399-L	1	7	30000	25000	10	.	.	.	10	4500	23500	50000	26500
399-O	10	.	2080	2240	7	18	.	.	25	1683	5085	10079	4994
399-P	42	93	200150	242970	468	4	26	.	498	198604	219735	623960	404225
399-T	4	.	7500	9150	44	37	6	11	98	18100	5340	39060	33720
399-U	3	.	1230	200	5	.	.	.	5	450	153	1140	987
399-W	15	.	12476	10950	24	17	2	3	46	10098	9150	32683	23533
421-B	1	32	25000	20000	250	.	.	.	250	75000	21500	103500	82000
421-C	446	353	312882	375800	2275	.	104	.	2379	756215	931095	2373696	1447991
421-D	98	.	54460	58239	380	.	32	1	413	111445	90667	278698	187431
421-L	5	.	1485	1600	35	.	.	.	35	10230	9400	23950	13900
421-M	1	.	.	.	6	.	.	.	6	425	360	2000	1640
421-P	23	4	47235	40520	108	.	29	.	137	40820	82734	169704	86970
421-S	40	18	72050	59222	624	.	12	.	636	203045	181854	511486	328732
509	1	65	25000	30000	30	.	3	.	33	10000	5000	30000	25000
524	1	1	4000	.	1	.	.	.	1	120	.	.	.
574	26	24	2525445	257372	293	.	9	.	302	132022	165450	751740	586290
576	4	35	453000	33100	22	.	1	.	23	13440	4200	63400	11800
623	1	.	300	50	2	.	.	.	2	1000	.	1000	.
658	61	1	11330	5702	70	.	1	.	71	11755	5245	26710	20865
695	73	.	30653	18709	107	3	11	.	121	38127	9179	72606	54282
699	1	.	1000	50	1	.	.	.	1	300	50	600	550
862	16	.	25840	10145	34	.	9	.	43	13351	11225	34500	22975
874	5	6	23200	900	5	35	1	2	43	2836	3335	16540	13205
893	145	.	184824	77322	260	50	26	10	346	102527	75457	324885	249128
896	5271	122	1154952	766881	7606	6	296	2	7912	1520889	987340	3754955	2739531
897-G	12	.	14850	1125	14	.	1	.	15	2926	1210	8950	7740
897-L	2	.	480	500	4	.	.	.	4	930	1900	3220	1320
899	3	.	590	800	5	.	1	.	6	750	675	1825	1150
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	45070	220704	87731701	70034255	154432	24958	13722	4204	197317	42261184	127568152	228102802	98719375

Appendix Table A-4

CANADA: INDUSTRIAL STRUCTURE BY SEC CODES, 1871

SEC	OBSERV	FORCE	FIXCAP	FLOCAP	EMPMEN	EMPWOM	EMPBOY	EMPGIRL	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
1.00	44	122	44312	34767	212	4	1	.	217	17174	180875	263652	80707
2.00	14	321	394100	1091175	507	.	39	1	547	143482	1451750	1858630	409930
4.00	60	1482	1711760	309090	1281	7	93	1	1382	382562	198457	1166452	609503
5.01	4414	53986	15795601	11246769	11800	847	969	219	13835	3046208	49275213	65131373	15683047
5.02	76	312	539775	806889	1001	483	459	402	2345	389035	1193775	2422166	1228391
5.03	4	316	459000	177000	184	315	3	.	502	83798	348202	500615	152413
5.04	6465	4936	6653343	8799926	19644	4393	1452	775	26264	5835484	14774310	28075934	13005041
5.05	3958	12950	4656263	2972499	4655	4507	991	798	10951	1565113	7118998	11290490	3926077
5.06	116	198	95078	153272	96	424	23	18	561	72065	196729	379459	182721
5.07	2567	127	3605811	4191738	3958	11566	359	1184	17067	2633673	8501382	14736135	6094435
5.08	10257	121037	18752551	17254548	44369	430	4130	227	49156	8637905	19908349	38260853	18133810
5.09	1087	2620	2203644	1725635	4299	216	385	21	4921	1279811	1540280	4006764	2459144
5.10	41	1912	699550	506422	527	394	52	92	1065	237597	674775	1370973	696198
5.11	375	387	2603445	1182838	2888	561	807	143	4399	1418228	1609156	4243113	2636207
5.12	92	2302	1599247	1188965	2686	22	306	14	3028	823945	1571043	3271697	1698284
5.13	1398	4366	3260878	3186115	6753	94	729	29	7605	2188625	3688599	8450100	4747722
5.14	1000	5721	4254245	5265977	8204	38	608	5	8855	2847320	2553630	9217752	6637682
5.15	3760	3136	11300111	4706184	18597	101	646	7	19351	5188681	4910636	12576154	7736969
5.17	1800	1948	1416323	955783	6913	47	695	57	7712	1227113	914711	3550355	2390234
5.18	50	680	540955	552772	406	4	36	.	446	187510	1334797	2883484	1548687
5.19	864	903	1379009	1203434	1800	190	187	155	2332	422798	2271380	3823767	1512632
5.20	392	282	798124	764421	1521	221	216	41	1999	584904	763230	2068920	1267042
6.00	614	407	513112	555381	3678	.	177	1	3856	1197180	1317610	3463034	2148664
7.00	32	125	3007445	320472	346	.	13	.	359	155582	174650	845140	623090
8.00	136	1	43283	24511	180	3	12	.	195	51182	14474	100916	75697
10.00	5454	128	1404736	857673	7928	91	334	14	8369	1644209	1081142	4144875	3035049
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	45070	220704	87731701	70034255	154432	24958	13722	4204	197317	42261184	127568152	228102802	98719375

Appendix Table A-5

CANADA: FIRMS REPORTING 100+ HP OF WATER-POWER, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
O077	B-2	BRONSON & WESTON	SAW MILL	251	350000	WATER	2500	300	70000	240000	360000	120000
O075	C	HAMILTON BROS	SAW MILL	251	100000	WATER	1500	168	27000	400000	540000	140000
Q126	B-2	JONES C H	SAW MILL	251	10000	WATER	1000	5	500	1000	1500	500
NB185	B	SOWERBY JAMES	SCIE, ML	251	33000	WATER	900	30	7200	16000	27000	11000
Q093	B-4	EDDY EZRA BUTLER	SAW M/MATCH/PAIL	251/254	250000	WATER	600	760	144000	400000	661000	261000
Q150	E	PRICE BROS & CO	SCIE, ML	251	20000	WATER	600	220	25000	110000	126000	16000
NB175	I-3	BOARDMAN G A & CO	SAW MILL	251	50000	WATER	600	90	15000	65000	80000	15000
Q138	A	CLARK C S	SAW MILLS	251	40000	WATER	600	140	32000	29600	73200	43600
NB175	I-3	MCADAM JOHN & SON	SAW/LATH MILL	251	10000	WATER	600	20	6000	40000	50000	10000
NB175	I-3	MCALLISTER WILLIA	SAW MILL	251	5000	WATER	600	21	2500	10000	20000	10000
O077	B-2	PERLEY & PATTEE	SAW MILL	251	150000	WATER	500	250	70000	240000	330000	90000
Q094	B	MCLAREN JAS & CO	SAW MILL	251	72000	WATER	500	106	15000	80000	160000	80000
O053	B-3	SMITH R C & CO	SAW MILLS	251	100000	WATER	500	110	14300	72000	90000	18000
O075	G	HAGAR ALBERT	SAW MILL	251	25000	WATER	500	66	17500	25000	48000	23000
O064	A-1	MCVENE ALEXANDER	GRIST MILL	105	8000	WATER	500	2	800	21000	24000	3000
Q154	C-1	ATKINSON HENRY	SCIE, ML	251	100000	WATER	480	100	20000	160000	200000	40000
Q093	B-2	GILMORE & CO	SAW MILL	251	250000	WATER	470	302	52000	225000	320000	95000
O017	F-2	MCQUARRIE & THORB	GRIST/FLOUR MILL	105	10000	WATER	400	5	2000	266500	266500	0
NB175	I-3	PORTER GEO M & SO	SAW MILL	251	16000	WATER	400	80	22400	50000	74000	24000
Q144	F-1	HALL G B	SCIE, ML	251	105000	WATER	350	526	84900	391420	700000	308580
Q111	F	BAUTIN ALEXANDRE	PAPIER/ENVELOPPE	271	12500	WATER	350	130	30000	106400	211860	105460
O021	B-1	TUTTLE DATE & ROD	AGRC HAND TOOLS	306	75000	WATER	350	120	55000	36000	137000	101000
Q140	A-2	BRITISH AMERICAN	SAW MILL	251	22000	WATER	350	23	4400	12000	24000	12000
NB174	L	DOMVILLE JAMES	NAIL FACTORY	305-N	50000	WATER	300	30	10000	70000	120000	50000
Q155	B	JOLY H G	SCIE, ML	251/251-S	10000	WATER	300	45	10500	4500	42000	37500
Q101	F	ROWAN THOMAS	GRIST MILL	105/105-O	2400	WATER	300	2	100	4000	7000	3000
O064	I-2	PAWLEY WILLIAM	SAW MILL	251	2000	WATER	300	16	2000	2800	5600	2800
O018	D-2	LYMBURNER & LAFFE	SAW MILL	251	20	WATER	300	2	50	1500	2000	500
O081	B	MCLAUGHLIN BROS	SAW MILL	251	50000	WATER	260	100	15000	90000	110000	20000
O077	B-2	BALDWIN A H	SAW MILL	251	90000	WATER	250	274	50000	180000	276000	96000
O077	B-2	BOOTH JAMES R	SAW MILL	251	400000	WATER	250	200	60000	180000	250000	70000
O021	A-3	GORDON & MACKAY	LYBSTER COTTON M	181	150000	WATER	250	200	36000	66000	150000	84000
O042	H	CHRISTIE A R	SAW MILL	251	100000	WATER	250	87	25000	40000	85000	45000
O042	H	HOTCHKISS/HEWSON	SAW MILL	251	75000	WATER	250	82	25000	40000	85000	45000
Q121	H-2	DESSAULLES G C ?	FARINE, ML	105	35000	WATER	215	4	725	36847	38000	1153
Q106	A-9	GOULD IRA & SONS	FLOUR MILL	105	150000	WATER	200	20	8000	500000	550000	50000
Q107	A-5	PARKER JAMES	FARINE, ML	105	45000	WATER	200	12	6000	325000	360000	35000
Q129	E-2	BAPTISTE GEORGE	SCIE, ML	251	15000	WATER	200	125	16800	120000	266600	146600
O021	A-3	RIORDAN JOHN	PAPER MILLS	271	156000	WATER	200	100	30000	70000	160000	90000
NS195	G	DAVIDSON EDWARD &	SAW MILL	251	28000	WATER	200	104	14000	59400	85800	26400
NB175	I-3	EATON BROS	SAW MILL	251	35000	WATER	200	80	16000	64000	80000	16000
O076	F	BLACKBURN & MCLAR	WOOLEN FACTORY	182	35000	WATER	200	58	14400	60000	80000	20000
Q099	J	LAVIOLETTE GODEFR	FARINE, ML	105	25000	WATER	200	3	700	56000	66000	10000
Q137	E	NORCROSS & SANDER	SCIE, ML	251/251-S	30000	WATER	200	72	15600	35000	65000	30000
O031	G	HESPELER GEORGE	DISTILLERY	109-D	22500	WATER	200	15	3000	15000	54760	39760
NB180	A-1	DAVIS HUGH	SAW MILL	251	6000	WATER	200	3	1600	8000	16000	8000
O076	B	CASSELMAN MARTIN	SAW MILL	251	10000	WATER	200	24	1500	12000	15000	3000
NB179	K-1	POMPELLY & LONGST	SAW MILL/HANDLE	251/259	20000	WATER	200	18	6500	5500	12100	6600
Q137	K	HALL GEORGE BENSO	SCIE, ML	251	3000	WATER	200	3	900	5000	8000	3000
Q137	K	HALL GEORGE BENSO	CARDER, ML	189-W	50	WATER	200	1	300	2660	3192	532
O052	C-3	NEEDLER WILLIAM	GRIST MILL	105	24000	WATER	180	7	2800	120000	139996	19996

CANADA: FIRMS REPORTING 100+ HP OF WATER-POWER, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
O058	A	BOYD & MOSSUM ?	SAW MILL	251	33000	WATER	180	49	10100	15000	27000	12000
O080	B	ROSAMOND B & W &	WOOLEN FACTORY	182	200000	WATER	160	209	48600	270000	350000	80000
O033	C-4	GOLDIE JAMES	FLOUR MILL/COOPE	105	30000	WATER	160	38	15000	260000	275000	15000
Q106	A-9	BARTLEY W P & CO	ENGINE WORKS/FOU	315-E/315	150000	WATER	160	222	49200	36250	128175	91925
O038	G	BARBER JAMES	PAPER MILL	271	50000	WATER	160	46	11000	64000	90000	26000
NB180	A-3	MCADAM & SON	SAW MILL	251	8000	WATER	160	88	25200	28000	63500	35500
O019	I	MCDONOUGH JOHN	SAW MILL	251	12000	WATER	160	20	8000	27000	40000	13000
O073	B	BETHUNE ANGUS	GRIST/FLOUR MILL	105	12000	WATER	160	7	2950	6250	10000	3750
O027	H-1	NOXON S & T H	SAW MILL	251	5000	WATER	155	4	480	1300	3277	1977
O021	B-4	NEELON SYLVEST	FLOUR MILL	105	25000	WATER	150	20	8000	385000	447120	62120
Q140	A-1	PATON MF CO	WOOLEN FACTORY	182	133000	WATER	150	194	45000	156250	250000	93750
O039	A-3	BARBER & BROS	CLOTH FACTORY	182	150000	WATER	150	129	28000	90000	175000	85000
Q094	B	LIMOYNE & GIBB &	SAW MILL	251	90000	WATER	150	53	30000	90000	160000	70000
O056	D-2	HILLIARD GEORGE	SAW/GRIST MILL	251/105	20000	WATER	150	96	30000	65000	110000	45000
O067	B	JONES D FORD & CO	SHOVEL/FORK FACT	306	50000	WATER	150	55	15000	55000	80000	25000
NB185	A	CAIN WILLIAM S	SAW MILLS	251	15000	WATER	150	100	20000	25000	40000	15000
Q099	J	LANGWILL ROBERT ?	OAT/FLOUR MILL	105-O/105	10000	WATER	150	5	700	33600	36800	3200
Q141	F	SLUPER L	GRIST MILL	105	40000	WATER	150	2	1000	30000	32500	2500
Q143	B	GRANDBOIS HUBERT	SCIE, ML	251	4000	WATER	150	36	3700	13500	27500	14000
Q163	B	PRICE BROS & CO	SCIE, ML	251	4000	WATER	150	60	6000	14000	26000	12000
Q141	G-2	BALDWIN LEVI	GRIST MILL	105	6000	WATER	150	1	350	15000	16500	1500
Q141	F	SLUPER L	SAW MILL	251	5000	WATER	150	14	4000	6500	16000	9500
O061	A-2	REID OWEN	SAW MILL	251	10000	WATER	150	18	1882	7000	14000	7000
O065	E-3	ANGLIN ROBERT	SAW MILL	251	2000	WATER	150	6	1800	5000	8000	3000
O076	G-1	DICKINSON K	SAW MILL	251	1100	WATER	150	8	2000	4000	8000	4000
Q130	A	MENARD L J ALEX	SCIE/FARINE, ML	251/105	10600	WATER	150	8	800	5139	7231	2092
NB185	A	CAIN WILLIAM S	GRIST MILL	105	2000	WATER	150	1	300	40	1000	960
O015	D-2	PLEWES DAVID	FLOUR MILL	105	20000	WATER	140	14	5300	200000	229000	29000
O052	E-1	BOYD M ?	SAW MILL	251	45000	WATER	140	102	35000	52000	100000	48000
O034	D	ROBERTSON WILLIAM	FLOUR/OATMEAL MI	105/105-O	40000	WATER	140	10	4000	70000	85000	15000
Q095	A-1	CAMERON & EDWARDS	SAW MILL	251	8500	WATER	140	120	3000	25000	50000	25000
NB179	Q-1	GIBSON ALEXANDER	SAW MILL	251	35000	WATER	125	106	26000	90000	144000	54000
Q136	D	WATTS WILLIAM J	FARINE, ML	105	5000	WATER	125	2	600	16000	20000	4000
Q159	F	BAFARD LOUIS	SAW MILL	251	100	WATER	125	2	78	100	230	130
Q106	A-9	OGILVIE ALB & CO	GLENORA FLOUR MI	105	60000	WATER	120	38	10880	577400	672709	95309
O021	B-1	NORRIS JAMES	FLOUR MILLS	105	45000	WATER	120	25	10000	575000	640000	65000
O079	J	GILLIES & MCLAREN	SAW MILL	251	20000	WATER	120	163	35000	75000	120000	45000
O058	A	SCOTT W A	SAW MILL	251	15000	WATER	120	110	15000	50000	100000	50000
Q140	A-2	ANGUS & LOGAN & C	PAPER MILL	271	30000	WATER	120	41	12000	60000	90000	30000
O021	A-3	WAIT WILLIAM	COTTON MILLS	181	30000	WATER	120	75	11000	55000	75000	20000
O057	C-1	SMITH & BOYD & CO	SAW/SHINGLE MILL	251/251-S	20000	WATER	120	59	6000	35000	54000	19000
O045	A-2	TAYLOR JOHN & BRO	PAPER MANUFACTOR	271	80000	WATER	120	62	8000	20000	42000	22000
O082	B	MCLAREN BROS	GRIST MILL	105	5000	WATER	120	1	200	25000	24000	-1000
NS194	B-2	TUPPER F & SONS	SAW MILLS	251	6000	WATER	120	16	3200	14000	18000	4000
O081	I	MCDOUGALL JOHN SR	GRIST/FLOUR MILL	105	20000	WATER	115	4	1300	80000	95000	15000
NB174	J-2	SUTTON E & CO	SAW MILLS	251	55000	WATER	110	110	20000	105000	140000	35000
Q136	K	HALE G B	SAW MILL	251	10000	WATER	110	23	7000	9050	16953	7903
Q136	K	HALE G B	SHINGLE/LATH MIL	251-S/251	18000	WATER	110	10	2360	2250	7500	5250
O037	B-2	ELLIOT ADAM S	GRIST/SAW MILL	105/251	5000	WATER	108	5	1100	37200	42400	5200
Q106	A-9	MCDOUGALL JAMES	FLOUR MILL	105	150000	WATER	100	20	7000	380000	400000	20000
Q106	A-9	PILLOW HERSEY & C	NAIL MANUFACTURE	305-N	75000	WATER	100	155	45000	144600	225000	80400

CANADA: FIRMS REPORTING 100+ HP OF WATER-POWER, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
O031	G	RANDALL & FARR &	WORSTED/WOOLEN M	182/239	77000	WATER	100	163	35000	140000	200000	60000
O073	D-1	WARWICK JOHN	WOOLEN FACTORY	182	100000	WATER	100	145	18000	110000	200000	90000
O077	B-2	YOUNG LEVI	SAW MILL	251	100000	WATER	100	100	20000	150000	182000	32000
O077	E-2	MCLAREN J & CO	SAW MILL	251	40000	WATER	100	53	18000	80000	150000	70000
O077	B-2	YOUNG & BRONSON &	FLOUR MILL	105	20000	WATER	100	6	3000	118500	130000	11500
O023	C-2	COLEMAN JAMES	FLOUR/GRIST MILL	105	20000	WATER	100	4	1600	102250	127400	25150
O034	D	WILSON JAMES	FLOUR/OATMEAL MI	105/105-O	19000	WATER	100	8	4400	115000	121000	6000
O079	B	GOULD JAMES & JAS	GRIST MILL	105	10000	WATER	100	2	700	100000	108333	8333
NB175	I-2	TODD FREEMAN H	SAW MILL	251	15000	WATER	100	60	12000	75000	90000	15000
O012	C-4	CLARK T W/DUNCOMB	GRIST/SAW MILL	105/251	16000	WATER	100	12	4000	64000	84000	20000
Q133	C-1	PRICE BROS & CO	SAW MILLS	251	100000	WATER	100	200	40000	40000	80000	40000
O082	E	MOFFAT ALEXAND	FLOUR/GRIST MILL	105	30000	WATER	100	13	3600	48000	77500	29500
Q093	B-4	CRANDALL & CO	SAW MILL	251	35000	WATER	100	88	15000	57000	74000	17000
NB175	I-2	HILL ABNER	SAW MILL	251	10000	WATER	100	31	13000	45000	65000	20000
NS197	K	CHISHOLM WM & CO	SAW MILL	251	30000	WATER	100	90	18000	30000	55000	25000
Q122	H	MELLIDA ANTOINE ?	SCIE, ML	251	14000	WATER	100	23	4000	20000	36500	16500
Q135	E-1	HALL HENRY	SCIE, ML	251	30000	WATER	100	50	10000	15000	35500	20500
O081	I	MCRAE JOHN	FLOUR/GRIST MILL	105	10000	WATER	100	2	700	25500	33000	7500
NB175	B	KNIGHT J E	SAW MILL	251	12000	WATER	100	36	1912	17500	27500	10000
Q143	E	BISSET JAMES	PAPIER, ML	271	40000	WATER	100	48	3000	17000	26400	9400
Q140	C	HIMLING WILLIAM	GRIST MILL	105	3000	WATER	100	1	300	20000	24000	4000
Q125	L	DARROCHER WILLIAM	SAW MILL/TUB FCY	251/259-C	12000	WATER	100	25	6500	5000	23000	18000
Q134	E	MANSEAU/COTE/BEAU	FARINE, ML	105	5000	WATER	100	2	360	15000	22400	7400
NB175	B	SMART NATHAN	SAW MILL	251	27000	WATER	100	30	6000	12500	21700	9200
Q099	A	MASSON G ?	SCIE, ML	251	12000	WATER	100	3	2160	12900	20736	7836
O063	E-2	MIGHT H M & CO	SAW MILL	251	10000	WATER	100	25	3500	12000	20000	8000
NB180	A-1	MURCHIE CRAIG & S	SAW/GRIST MILL	251/105	9000	WATER	100	14	5000	9000	18000	9000
Q140	C	HIMLING WILLIAM	SAW MILL	251	3000	WATER	100	2	700	15000	18000	3000
O077	B-2	WASHBURN & SEXTON	AXE FACTORY	306-T	4000	WATER	100	12	5200	5400	15900	10500
O078	I-1	MCCAAN JAMES	SAW MILL	251	5000	WATER	100	20	2500	12000	15000	3000
O067	E	MCINTOSH JAMES	GRIST MILL	105	6000	WATER	100	2	800	13500	14260	760
NS196	H	HOSTEMAN JOHN	NAIL FACTORY	305-N	25000	WATER	100	12	2500	10000	13500	3500
O061	A-3	BARNES JAMES	SAW MILL	251	8000	WATER	100	20	1200	9375	12400	3025
O067	H-2	FREDENBURGH W H	SAW MILLS	251	1000	WATER	100	15	2340	6000	12000	6000
Q096	A-1	WARD	SAW MILL	251	15000	WATER	100	16	2000	8000	12000	4000
NB175	I-3	ANDREWS JOHN D	AXE/EDGE TOOL FC	306-T	3000	WATER	100	13	3500	1700	10000	8300
NB184	F-1	MCLAGGAN ALEXANDE	SAW MILL	251	150	WATER	100	14	2000	7000	10000	3000
Q163	B	DUPUIS LOUIS C &	FARINE, ML	105	3600	WATER	100	2	210	7000	8200	1200
Q121	H-2	DESSAULLES G C ?	ETOFFES, MF	182	6000	WATER	100	10	2400	4000	7800	3800
Q094	A-2	CANADA PLUMBAGO C	PLUMPAGO/CRUCIBL	359-B	1000	WATER	100	16	5235	2000	7318	5318
Q127	G-2	RUTHERFORD WILLIA	SCIE, ML	251	2000	WATER	100	14	3500	3500	7000	3500
Q140	C	NICHOLS MATILDA	GRIST MILL	105	1000	WATER	100	2	464	4000	6000	2000
Q099	H	JEFFREY ALEXANDER	GRIST MILL	105	8000	WATER	100	4	1200	3000	5000	2000
Q141	E-1	BALDWIN JOHN P	SAW MILL	251	3000	WATER	100	4	960	2400	4800	2400
Q140	C	NICHOLS MATILDA	SAW MILL	251	1000	WATER	100	3	696	3500	4300	800
O063	D-3	VADER WILLIAM	SAW MILL	251	3600	WATER	100	14	1400	1350	3000	1650
Q100	C-2	PANGMAN JOHN HENR	MOUDRE LE GRAIN,	105	20000	WATER	100	2	400	1800	2800	1000
Q134	E		FOULER/PRESSER,	189-W	700	WATER	100	3	240	400	1700	1300
Q142	H	SMITH J R	SAW MILL	251	7000	WATER	100	4	800	500	1600	1100
O063	D-3	VADER WILLIAM	SHINGLE MILL	251-S	400	WATER	100	1	300	450	1500	1050
Q091	A-1	O'CONNORS OWEN	SAW MILL	251	1000	WATER	100	3	500	600	1300	700

CANADA: FIRMS REPORTING 100+ HP OF WATER-POWER, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
Q134	E	MANSEAU/COTE/BEAU	CARDER, ML	189-W	800	WATER	100	3	240	600	900	300
O062	G-1	DULMAGE SAMUEL	SAW MILL	251	1100	WATER	100	2	150	175	560	385
Q159	F	BAFARD LOUIS	GRIST MILL	105	1000	WATER	100	1	100	190	300	110
Q159	F	ARMSTRONG MICHAEL	SAW MILL	251	140	WATER	100	2	60	90	250	160
Q150	H-2	BOUDREAU ONESIME	FARINE, ML	105	2000	WATER	100	2	300	19000	.	.
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					6197260		34198	9475	2019682	11174236	15740860	4585624

Appendix Table A-6 CANADA: FIRMS REPORTING 100+ HP OF STEAM-POWER, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
0024	B-3	HAMILTON ROLLING	ROLLING MILLS	291-R	70000	STEAM	400	225	80000	410000	680000	270000
Q127	A-2	MOCK VALENTINE	SAW MILL	251	5000	STEAM	400	2	150	500	1000	500
0047	A-4	GZOWSKI C & CO	ROLLING MILL	291-R	100000	STEAM	250	200	72000	387000	500000	113000
Q100	A	ASSOMPTION LUMBER	SCIE, ML	251	100000	STEAM	250	215	25000	25000	70000	45000
0025	G-3	PLATT MARY AN	TECUMSETH SALT W	079	21500	STEAM	225	19	7500	25000	40000	15000
Q105	C-5	CANADIAN RUBBER C	RUBBER COMPANY	162	400000	STEAM	210	370	70245	301513	431415	129902
Q107	A-2	MNTRL ROLLING MIL	ROLLING MILL	291-R	200000	STEAM	200	262	65000	200000	400000	200000
Q106	A-1	MCLAREN & CO	BOOT/SHOE FACTOR	174	27000	STEAM	200	222	50000	150000	250000	100000
Q128	B-1	HUNTERSTOWN LUMBE	SCIE, ML	251	150000	STEAM	200	350	47136	72000	125000	53000
Q131	C	ST MAURICE LUMBER	SCIE, ML	251	400000	STEAM	190	250	20000	100000	182000	82000
Q106	A-11	GRAND TRUNK RAILW	RLWY CARS/ENGINE	326	270000	STEAM	185	790	250000	500000	750000	250000
NB174	J-1	BAMHILL ALEXANDER	LUMBER MILL	251	25000	STEAM	180	65	16000	58000	84000	26000
NS205	H-1	LAWSON JOHN	COAL MINE	061	10000	STEAM	170	59	30000	12000	14000	2000
0042	H	DODGE & CO	SAW MILL	251	25000	STEAM	160	50	18000	30000	75000	45000
NB174	J-1	CORKING ANDRE & C	SAW MILL	251	50000	STEAM	150	225	75000	84000	180000	96000
0061	B-1	RATHBUN H B & S	SAW MILL	251	50000	STEAM	150	311	39250	77900	140754	62854
0042	B	HOTCHKISS & PECKH	SAW MILL	251	30000	STEAM	150	133	26000	54000	120000	66000
NB174	L	DOMVILLE JAMES	ROLLING M/IRON W	291-R	50000	STEAM	150	60	20000	40000	70000	30000
0049	H	THOMSON J & MILLE	SAW MILL	251	70000	STEAM	150	72	13000	30000	60000	30000
0053	B-3	BROWN L & M	SAW MILL	251	34000	STEAM	140	40	4160	24000	36000	12000
0053	B-3	GREEN & ELLIS	SAW MILL	251	40000	STEAM	140	80	10400	20000	32000	12000
0046	A-3	NORTHERN RAILWAY	RAILWAY WORK SHO	326	6568000	STEAM	139	561	215808	34533	.	.
0079	J	CALDWELL & BOYD	SAW MILL	251	40000	STEAM	135	40	8400	62500	100000	37500
Q147	A-1	PETERS SIMON	SASH/DOOR/CAR FC	251/254	60000	STEAM	125	100	19000	22000	68000	46000
0060	C-4	FLINT & YEAMANS	SAW MILL	251	15000	STEAM	125	45	2000	6000	10000	4000
0060	A-1	PAGE A S & CO	SAW MILL	251	20000	STEAM	120	125	30000	105000	140000	35000
0054	A-1	CAMPBELL A H & CO	SAW MILL	251	143000	STEAM	120	80	14000	75000	110000	35000
0043	A-6	DURHAM JAMES	SAW MILL	251	10000	STEAM	120	50	10000	35000	56000	21000
Q152	C	MOLSON & CO	FONDERIE	291	50000	STEAM	120	108	20000	3000	40000	37000
Q136	C	WILSON T ISAAC	SCIE, ML	251	400	STEAM	120	40	3500	10800	15000	4200
0047	A-3	GOODERHAM & WORTS	DISTILLERY	109-D	350000	STEAM	116	150	60000	450000	1470000	1020000
Q153	A-1	BENNETT SAMUEL	SCIE, ML	251	250000	STEAM	116	350	90000	120000	270000	150000
Q106	A-9	REDPATH JOHN & SO	SUGAR REFINERY	108-R	240000	STEAM	110	220	71000	2400000	2620000	220000
0060	B	GILMOUR & CO	SAW MILL	251	60000	STEAM	110	170	36000	154000	220000	66000
NB187	B-2	TOMKINS JOSEPH	PLASTER/STAVES M	359-P/259-C	100000	STEAM	105	107	32211	6339	41940	35601
Q105	C-6	MCMULLEN & ADAMS	TABAC, MF	153	150000	STEAM	100	400	75000	160000	500000	340000
0069	B-2	WISER & EGGART	DISTILLERY	109-D	30000	STEAM	100	38	19000	70000	240000	170000
Q145	A-1	DRUM WILLIAM	CABINET/CHAIR FC	261	150000	STEAM	100	120	32000	100000	160000	60000
0054	A-1	MCDOUGALL & LUDGA	SAW MILL	251	152960	STEAM	100	225	52800	67500	135000	67500
NB174	J-1	GODARD JOHN	SAW MILL	251	40000	STEAM	100	80	18000	80000	130000	50000
NB179	E	MORRISON JOHN A	SAW MILL	251	40000	STEAM	100	102	23000	82500	121500	39000
Q100	F	CUSHING BROS	SCIE, ML	251	5000	STEAM	100	60	11000	92250	105000	12750
0059	C-1	PAGE & CO	SAW MILL	251	20000	STEAM	100	70	15000	67500	93400	25900
0001	B	THOMAS CHARLES &	SAW/FLOUR MILL	105/251	1200	STEAM	100	20	5500	80000	89000	9000
Q122	H	MILLER EXTRAIT AS	ECORCE D'EXTRAIT	031	50000	STEAM	100	40	10000	58000	80000	22000
Q145	D	ROCHE JOHN	BLACKSMITH	327-M	90000	STEAM	100	92	32000	35000	80000	45000
NS205	H-1	RUTLEDGE WILLIAM	COAL MINE	061	100000	STEAM	100	122	36000	40000	50000	10000
0086	C-1	DODGE & CO	MAGNETAWAN LUMBE	251	80000	STEAM	100	47	10000	30000	45000	15000
0042	C	PRENTICE ALEXANDE	SAW/SHINGLE/LATH	251/251-S	24900	STEAM	100	40	12480	13500	40750	27250
0075	C	HERSEY WILLIAM A	SAW MILL	251	10000	STEAM	100	20	3000	22500	30000	7500
0042	C	COOK CHRISTOPHER	LUMBER/SHINGLE F	251/251-S	27000	STEAM	100	41	12480	14000	24670	10670
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					11004960		7531	7663	1918020	7097835	11326429	4263127

Appendix Table A-7 CANADA: TOP ONE PER CENT FIRMS BY SIC CODE, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
0065	C	CALVIN & BRECK	RAFT BUILDING	031	32000		.	156	40000	22400	150000	127600
Q153	G-1	GILMOUR ALLAN & C	ESTACADES/NAVIRE	031/327	30000		.	100	25000	750000	800000	50000
Q105	C-5	MOLSON J H R & BR	SUGAR REFINERY	108-R	120000	STEAM	60	119	36800	1162000	1288750	126750
Q106	A-9	REDPATH JOHN & SO	SUGAR REFINERY	108-R	240000	STEAM	110	220	71000	2400000	2620000	220000
Q105	C-5	MOLSON J H R & BR	BREWERY	109-B	80000	STEAM	7	65	19200	74200	175000	100800
Q145	A-2	BOSWELL	BREWERY	109-B	200000	STEAM	9	51	12000	45000	100000	55000
Q106	A-1	DOW WILLIAM & CO	BREWERY/DISTILLE	109-B/109-D	160000	STEAM	35	90	32000	120000	280000	160000
0001	J-2	WALKER HIRAM	DISTILLER/MALSTE	109-D	47200	STEAM	45	106	45700	240000	1114982	874982
0047	A-3	GOODERHAM & WORTS	DISTILLERY	109-D	350000	STEAM	116	150	60000	450000	1470000	1020000
Q105	B-1	MCDONALD W C	TOBACCO WORKS	153	50000	STEAM	25	550	82000	263000	520000	257000
Q105	C-6	MCMULLEN & ADAMS	TABAC, MF	153	150000	STEAM	100	400	75000	160000	500000	340000
Q105	C-5	CANADIAN RUBBER C	RUBBER COMPANY	162	400000	STEAM	210	370	70245	301513	431415	129902
Q105	B-10	CAMIRANT & BLONDI	TANNERIE	172	30000	STEAM	15	84	24100	93600	151320	57720
Q107	A-2	MOSELEY & RICKER	LEATHER MANUFACT	172	150000	STEAM	20	80	28000	87000	160000	73000
Q132	D	RICHARDSON & SONS	TANNERIE	172	145000	WATER	50	56	11760	85000	170000	85000
NB174	D-1	FRANCIS M & SONS	BOOT/SHOE MF	174	30000		.	147	29000	78500	120000	41500
NB174	D-1	VALPY JOSEPH	BOOT/SHOE MF	174	30000	STEAM	5	127	32000	90000	150000	60000
0024	E-2	MCPHERSON JOHN &	BOOT/SHOE MF	174	70000	STEAM	25	175	50000	120000	200000	80000
0046	A-1	SESSIONS/TURNER/C	BOOTS/SHOE MF	174	30000	STEAM	15	510	100000	180000	300000	120000
0047	A-1	CHILDS & HAMILTO	BOOT/SHOE FACTOR	174	40000		.	192	65000	85000	160000	75000
Q104	A-1	MULLARKY MICHAEL	BOOT/SHOEMAKER	174	31000		.	290	67000	160000	312000	152000
Q104	A-1	SMITH COCHRANE &	BOOT/SHOE MF	174	50000	STEAM	12	350	90000	225000	410000	185000
Q104	A-1	BROWN & CHILDS	BOOT/SHOE MF	174	28500	STEAM	10	225	90000	130000	350000	220000
Q104	A-2	POPHAM JAMES & CO	BOOT/SHOE FACTOR	174	65000	STEAM	12	125	30000	70000	135000	65000
Q104	A-2	LINTON & COOPER	BOOT/SHOEMAKER	174	100000	STEAM	18	148	32000	90000	160000	70000
Q104	A-2	DONOVAN & WILLIAM	BOOT/SHOEMAKER	174	100000	STEAM	16	292	75000	220000	400000	180000
Q104	A-2	MCCREADY I & R &	BOOT/SHOE FACTOR	174	150000	STEAM	12	128	50000	60000	250000	190000
Q104	A-2	AMES MILLARD & CO	BOOT/SHOEMAKER	174	290000	STEAM	10	341	84000	225000	470000	245000
Q104	B	ROLLAND G S	BOOT/SHOE MF	174	80000	STEAM	10	350	60000	125000	250000	125000
Q104	C-2	VALOIS A & CO	CHAUSSURES, MF	174	40000	STEAM	10	275	54000	215000	295000	80000
Q106	A-1	RONAYNE M & CO	BOOT/SHOEMAKER	174	29000		.	115	60000	50000	180000	130000
Q146	D-1	WOODLEY SAMUEL	CHAUSSURES, MF	174	50000	STEAM	20	650	104000	440000	600000	160000
Q147	A-1	WOODLEY S	CHAUSSURES, MF	174	50000	STEAM	12	430	165000	200000	600000	400000
NB174	K-1	PARKS W & SON	COTTON FACTORY	181	100000	STEAM	80	101	19000	84000	130000	46000
0021	A-3	GORDON & MACKAY	LYBSTER COTTON M	181	150000	WATER	250	200	36000	66000	150000	84000
0023	C-2	YOUNG & LAW & CO	COTTON FACTORY	181	250000	W/S	90	143	29500	110000	200000	90000
Q106	A-9	WOOD PETER W	COTTON MILL	181	50000	WATER	75	94	19500	77000	129000	52000
0007	F	SCOON J A	STRATHROY WOOLEN	182	46000	STEAM	35	57	13000	54000	90000	36000
0031	F	CROMBIE JAMES	WOOLEN FACTORY	182	60000	WATER	6	67	12000	75000	120000	45000
0039	A-3	BARBER & BROS	CLOTH FACTORY	182	150000	WATER	150	129	28000	90000	175000	85000
0054	B-3	FRASER & CO	WOOLEN MILL	182	60000	W/S	80	112	25000	72000	120000	48000
0073	D-1	WARWICK JOHN	WOOLEN FACTORY	182	100000	WATER	100	145	18000	110000	200000	90000
0080	B	ROSAMOND B & W &	WOOLEN FACTORY	182	200000	WATER	160	209	48600	270000	350000	80000
Q118	F	WILLETT SAMUEL	FLANELLES, MF	182	50000	WATER	60	54	12000	49000	95000	46000
Q140	A-1	PATON MF CO	WOOLEN FACTORY	182	133000	WATER	150	194	45000	156250	250000	93750
0031	G	RANDALL & FARR &	WORSTED/WOOLEN M	182/239	77000	WATER	100	163	35000	140000	200000	60000
NS197	A-1	DARTMOUTH ROPE WA	ROPE WALK	184	80000	STEAM	80	75	15000	80000	120000	40000
0024	E-2	SANFORD & MCINNES	CLOTHING MF	242	40000		.	455	60000	250000	350000	100000
Q104	A-1	SHOREY & CO	CLOTHING MF	243	30000		.	300	24000	112500	153800	41300
Q104	A-2	GREEN & SONS	FURRIER/HATTER	246	250000		.	180	60000	300000	450000	150000
Q146	C-2	RENFREW & MARCOU	FURRIER MANUFACT	246	100000		.	65	13000	200000	300000	100000

CANADA: TOP ONE PER CENT FIRMS BY SIC CODE, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
Q104	A-2	CORISTINE JAMES &	HAT/MITT/MOCCASI	246/175	200000	STEAM	14	315	26000	125000	350000	225000
O046	A-1	HENDERSON & BOSTW	HAT/BONNET MF	249-H	50000	STEAM	15	201	14400	24700	80000	55300
Q104	B	CARPENTER A T	VICTORIA STRAW W	249-H	200000	STEAM	20	177	42500	200000	360000	160000
NB174	I	ADAMS ZACHARIAH	SAW MILL	251	100000	STEAM	80	120	44000	84000	150000	66000
NB174	J-1	CORKING ANDRE & C	SAW MILL	251	50000	STEAM	150	225	75000	84000	180000	96000
NB174	J-1	GODARD JOHN	SAW MILL	251	40000	STEAM	100	80	18000	80000	130000	50000
NB174	J-2	SUTTON E & CO	SAW MILLS	251	55000	WATER	110	110	20000	105000	140000	35000
NB174	K-1	JEWETT BROS	SAW MILL	251	40000	STEAM	.	102	25000	40000	80000	40000
NB179	E	MORRISON JOHN A	SAW MILL	251	40000	STEAM	100	102	23000	82500	121500	39000
NB179	Q-1	GIBSON ALEXANDER	SAW MILL	251	35000	WATER	125	106	26000	90000	144000	54000
NB185	E-1	CARMAN & SMITH	SAW MILL	251	30000	STEAM	60	70	20000	160000	225000	65000
O042	B	HOTCHKISS & PECKH	SAW MILL	251	30000	STEAM	150	133	26000	54000	120000	66000
O042	H	CHRISTIE A R	SAW MILL	251	100000	WATER	250	87	25000	40000	85000	45000
O042	H	HOTCHKISS/HEWSON	SAW MILL	251	75000	WATER	250	82	25000	40000	85000	45000
O052	E-1	BOYD M ?	SAW MILL	251	45000	WATER	140	102	35000	52000	100000	48000
O054	A-1	CAMPBELL A H & CO	SAW MILL	251	143000	STEAM	120	80	14000	75000	110000	35000
O054	A-1	MCDOUGALL & LUDGA	SAW MILL	251	152960	STEAM	100	225	52800	67500	135000	67500
O060	B	GILMOUR & CO	SAW MILL	251	60000	STEAM	110	170	36000	154000	220000	66000
O061	B-1	RATHBUN H B & S	SAW MILL	251	50000	STEAM	150	311	39250	77900	140754	62854
O075	C	HAMILTON BROS	SAW MILL	251	100000	WATER	1500	168	27000	400000	540000	140000
O077	B-2	BRONSON & WESTON	SAW MILL	251	350000	WATER	2500	300	70000	240000	360000	120000
O077	B-2	BOOTH JAMES R	SAW MILL	251	400000	WATER	250	200	60000	180000	250000	70000
O077	B-2	YOUNG LEVI	SAW MILL	251	100000	WATER	100	100	20000	150000	182000	32000
O077	B-2	PERLEY & PATTEE	SAW MILL	251	150000	WATER	500	250	70000	240000	330000	90000
O077	B-2	BALDWIN A H	SAW MILL	251	90000	WATER	250	274	50000	180000	276000	96000
O077	E-2	MCLAREN J & CO	SAW MILL	251	40000	WATER	100	53	18000	80000	150000	70000
Q093	B-2	GILMORE & CO	SAW MILL	251	250000	WATER	470	302	52000	225000	320000	95000
Q093	B-3	WRIGHT & BATSON &	LUMBERING	251	198000	STEAM	80	540	60000	80000	160000	80000
Q094	B	MCLAREN JAS & CO	SAW MILL	251	72000	WATER	500	106	15000	80000	160000	80000
Q094	B	LIMOYNE & GIBB &	SAW MILL	251	90000	WATER	150	53	30000	90000	160000	70000
Q095	D	CAMERON JOHN & CO	SCIE, ML	251	55000	WATER	.	550	25000	57680	90000	32320
Q128	B-1	HUNTERSTOWN LUMBE	SCIE, ML	251	150000	STEAM	200	350	47136	72000	125000	53000
Q131	C	ST MAURICE LUMBER	SCIE, ML	251	400000	STEAM	190	250	20000	100000	182000	82000
Q133	C-1	PRICE BROS & CO	SAW MILLS	251	100000	WATER	100	200	40000	40000	80000	40000
Q134	D-1	SENECAL L A & CO	SCIE, ML	251	130000	STEAM	80	145	50000	90000	150000	60000
Q144	F-1	HALL G B	SCIE, ML	251	105000	WATER	350	526	84900	391420	700000	308580
Q153	A-1	BENNETT SAMUEL	SCIE, ML	251	250000	STEAM	116	350	90000	120000	270000	150000
Q154	C-1	ATKINSON HENRY	SCIE, ML	251	100000	WATER	480	100	20000	160000	200000	40000
Q135	A	MAYRAND ANTOINE	SCIE, ML	251/251-S	40000	STEAM	65	150	25000	80000	144000	64000
Q093	B-4	EDDY EZRA BUTLER	SAW M/MATCH/PAIL	251/254	250000	WATER	600	760	144000	400000	661000	261000
O077	C-1	CURRIER T M & CO	SASH/BLIND/DOOR	254	35000	STEAM	50	70	32000	50000	85000	35000
O010	C-1	MOORHEAD GEORGE	CABINET MANUFACT	261	100000	STEAM	10	68	30000	40000	150000	110000
O046	A-1	HAY R & CO	CABINETS/UPHOLST	261	400000	STEAM	40	430	120000	350000	500000	150000
O048	E-2	GIBBS WM H	CABINET FACTORY	261	60000	STEAM	50	181	55000	100000	165000	65000
O050	B-1	MCARTHUR F F	FURNITURE MF CO	261	50000	STEAM	40	175	58000	50000	135000	85000
Q145	A-1	DRUM WILLIAM	CABINET/CHAIR FC	261	150000	STEAM	100	120	32000	100000	160000	60000
O021	A-3	RIORDAN JOHN	PAPER MILLS	271	156000	WATER	200	100	30000	70000	160000	90000
Q138	H	LOGAN ANGUS & CO	PAPER FACTORY	271	110000	W/S	100	94	31265	58099	154796	96697
O046	B-1	HUNTER ROSE & CO	PRINTER/BINDERY	286/287-B	40000	STEAM	25	173	48000	50000	160000	110000
Q104	A-2	LOVELL JOHN	PRINTING/BINDERY	286/287-B	80000	STEAM	6	147	40900	30000	100000	70000
O046	A-1	ROBERTSON & COOK	PRINTING OFFICE	289	50000	STEAM	10	95	70000	100000	200000	100000

CANADA: TOP ONE PER CENT FIRMS BY SIC CODE, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
0047	A-1	BEATY JAMES	PUBLISHING/PRINT	289	165000	STEAM	20	80	60000	100000	250000	150000
0047	A-1	THE GLOBE	PUBLISHING OFFIC	289	60000		.	80	70000	110000	220000	110000
0077	C-1	TAYLOR ISAAC B	PRINTING EST	289	50000	STEAM	25	140	50000	40000	113397	73397
NS199	B	ACADIA IRON/STEEL	IRON/STEEL FACTO	291	300000	W/S	195	220	60000	3100	100000	96900
0024	B-3	HAMILTON ROLLING	ROLLING MILLS	291-R	70000	STEAM	400	225	80000	410000	680000	270000
0047	A-4	GZOWSKI C & CO	ROLLING MILL	291-R	100000	STEAM	250	200	72000	387000	500000	113000
Q107	A-2	MNTRL ROLLING MIL	ROLLING MILL	291-R	200000	STEAM	200	262	65000	200000	400000	200000
Q106	A-2	IVES & ALLAN	FOUNDRY	294	60000	STEAM	45	230	55000	40000	200000	160000
Q104	A-1	MITCHELL ROBERT &	BRASS/COPPER FOU	297	44300	STEAM	10	120	36100	37590	81677	44087
Q106	C-3	CHANTALOUP ERNEST	BRASS FNDRY/LAMP	297/309	50000	STEAM	10	171	60000	20000	100000	80000
Q106	A-9	PECK BENNY & CO	NAIL/SPIKE FACTO	305-N	80000	WATER	70	108	30000	116000	170000	54000
Q106	A-9	PILLOW HERSEY & C	NAIL MANUFACTURE	305-N	75000	WATER	100	155	45000	144600	225000	80400
0021	B-1	TUTTLE DATE & ROD	AGRC HAND TOOLS	306	75000	WATER	350	120	55000	36000	137000	101000
0048	D-1	WHITING & COWAN	SCYTHES/HOES/FOR	306	40000	WATER	70	52	28400	41250	100000	58750
0010	C-1	MCCLARY J & O	FOUNDRY	307-S/311	50000	STEAM	25	73	30000	60000	100000	40000
Q106	A-1	CLENDENING WILLIA	FOUNDRY	307-S/315	40000	STEAM	20	150	50000	60000	130000	70000
0068	B	SMART JAMES	FOUNDRY	309/307-S	32000	STEAM	32	160	45000	50000	140000	90000
0044	B-2	PATTERSON BROS	AGRC MACHINE WOR	311	50000	W/S	30	125	50000	30650	113630	82980
0044	B-5	ABELL JOHN	AGRC WKS/FLOUR M	311/105	42000	STEAM	80	90	35000	43000	119000	76000
0039	E-2	HAGGERT BROS	FOUNDRY/AGRC IMP	311/307-S	30000	STEAM	20	93	31500	50500	103500	53000
0013	F-2	NOXON BROS	FOUNDRY	311/315	70000	STEAM	60	103	42000	50500	111400	60900
0013	F-2	EASTWOOD & CO	AGRC IMPLEMENT M	311/315	30000	STEAM	16	70	28000	51860	101000	49140
0079	B	COSSITT & BRO	FOUNDRY/AGRC IMP	311/315	50000	WATER	60	65	25000	27700	107000	79300
Q106	A-2	BRUSH GEORGE	FOUNDRY/MACHINE	315-E	50000	STEAM	20	80	25000	25000	80000	55000
0024	C-2	BECKETT F G & C	ENGINE/BOILER MF	315-E/301	100000	STEAM	50	120	40000	40000	100000	60000
0048	E-2	JOSEPH HALL MFG C	ENGINES/AGRC IMP	315-E/311	200000	STEAM	50	266	125000	56600	300000	243400
0031	D-3	GOLDIE/MCCULLOCH/	ENGINE/MACHINE W	315-E/315	100000	STEAM	50	203	65000	27700	180000	152300
NS196	A-1	MONTGOMERY WILLIA	MACHINE SHOP/FOU	315-E/315	55480	STEAM	30	63	21181	15540	125000	109460
0015	D-2	WATEROUS C H & C	ENGINES/MACHINER	315-E/315	57000	STEAM	40	118	40573	19700	120000	100300
Q106	A-9	GILBERT E E	ENGINE/MACHINE W	315-E/315	35000	STEAM	40	145	50000	46500	120000	73500
Q106	A-9	BARTLEY W P & CO	ENGINE WORKS/FOU	315-E/315	150000	WATER	160	222	49200	36250	128175	91925
0046	C-1	DICKEY NEILL & CO	ENGINES/FOUNDRY	315-E/326	120000	STEAM	50	230	80000	112900	275600	162700
0033	C-3	GUELPH SEWING M C	SEWING MACHINE F	315-S	65000	STEAM	12	180	75000	62000	204800	142800
0024	E-2	WANZER R M & C	SEWING MACHINE M	315-S	58000	STEAM	40	275	86000	65000	210000	145000
Q106	A-3	LAWLOR J D	SEWING MACHINE M	315-S	59000	STEAM	4	51	25000	12500	112500	100000
Q106	A-9	MCDOUGALL JOHN	FOUNDRY/MILLWRIG	315/315-E	30000	WATER	25	140	60000	37000	104000	67000
0047	A-3	HAMILTON WILLIAM	FOUNDRY/MACHINE	315/326	100000	STEAM	60	200	100000	35000	620000	585000
0015	D-1	GRAND TRUNK RAILW	REPAIR SHOP	326	435000	STEAM	30	315	182000	82000	326000	244000
0066	F	CANADIAN ENGINE C	RAILWAY CARS/ENG	326	200000	STEAM	20	173	75000	200988	306000	105012
Q106	A-11	GRAND TRUNK RAILW	RLWY CARS/ENGINE	326	270000	STEAM	185	790	250000	500000	750000	250000
Q106	A-9	MCDOUGALL JOHN &	RLWY CAR WHEEL F	326	50000	STEAM	15	60	36000	85000	144000	59000
Q145	D	ROCHE JOHN	BLACKSMITH	327-M	90000	STEAM	100	92	32000	35000	80000	45000
NB174	K-2	HARRIS JAMES & CO	IRON FOUNDRY	327/315-E	40000	STEAM	30	134	40200	36000	92000	56000
Q107	A-2	ST LAWRENCE GLASS	FLINT GLASS MF	356	50000	STEAM	20	117	35000	20000	100000	80000
NS197	A-2	STARR MF CO LIMIT	SKATE MF	393-S	45000	WATER	60	73	30000	35000	90000	55000
0046	D-3	WILLIAM R S	MELODEON EST	399-P	30000	STEAM	20	60	30000	35000	80000	45000
0047	A-3	CONSUMERS GAS CO	GAS WORKS	574	400000	STEAM	10	51	19000	33000	124000	91000
Q106	A-3	NEW CITY GAS CO	GAS FACTORY	574	600000		.	72	28000	9000	215000	206000
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					16673440		16870	27710	7236710	21175190	38561996	17386806

CANADA: TOP ONE PER CENT FIRMS BY PROPRIETOR, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
O044	B-5	ABELL JOHN	AGRC WKS/FLOUR M	311/105	42000	STEAM	80	90	35000	43000	119000	76000
NS199	B	ACADIA IRON/STEEL	IRON/STEEL FACTO	291	300000	W/S	195	220	60000	3100	100000	96900
NB174	I	ADAMS ZACHARIAH	SAW MILL	251	100000	STEAM	80	120	44000	84000	150000	66000
Q104	A-2	AMES MILLARD & CO	BOOT/SHOEMAKER	174	290000	STEAM	10	341	84000	225000	470000	245000
Q154	C-1	ATKINSON HENRY	SCIE, ML	251	100000	WATER	480	100	20000	160000	200000	40000
O077	B-2	BALDWIN A H	SAW MILL	251	90000	WATER	250	274	50000	180000	276000	96000
O039	A-3	BARBER & BROS	CLOTH FACTORY	182	150000	WATER	150	129	28000	90000	175000	85000
Q106	A-9	BARTLEY W P & CO	ENGINE WORKS/FOU	315-E/315	150000	WATER	160	222	49200	36250	128175	91925
O047	A-1	BEATY JAMES	PUBLISHING/PRINT	289	165000	STEAM	20	80	60000	100000	250000	150000
O024	C-2	BECKETT F G & C	ENGINE/BOILER MF	315-E/301	100000	STEAM	50	120	40000	40000	100000	60000
Q153	A-1	BENNETT SAMUEL	SCIE, ML	251	250000	STEAM	116	350	90000	120000	270000	150000
O077	B-2	BOOTH JAMES R	SAW MILL	251	400000	WATER	250	200	60000	180000	250000	70000
Q145	A-2	BOSWELL	BREWERY	109-B	200000	STEAM	9	51	12000	45000	100000	55000
O052	E-1	BOYD M ?	SAW MILL	251	45000	WATER	140	102	35000	52000	100000	48000
O077	B-2	BRONSON & WESTON	SAW MILL	251	350000	WATER	2500	300	70000	240000	360000	120000
Q104	A-1	BROWN & CHILDS	BOOT/SHOE MF	174	28500	STEAM	10	225	90000	130000	350000	220000
Q106	A-2	BRUSH GEORGE	FOUNDRY/MACHINE	315-E	50000	STEAM	20	80	25000	25000	80000	55000
O065	C	CALVIN & BRECK	RAFT BUILDING	031	32000		.	156	40000	22400	150000	127600
Q095	D	CAMERON JOHN & CO	SCIE, ML	251	55000	WATER	.	550	25000	57680	90000	32320
Q105	B-10	CAMIRANT & BLONDI	TANNERIE	172	30000	STEAM	15	84	24100	93600	151320	57720
O054	A-1	CAMPBELL A H & CO	SAW MILL	251	143000	STEAM	120	80	14000	75000	110000	35000
O066	F	CANADIAN ENGINE C	RAILWAY CARS/ENG	326	200000	STEAM	20	173	75000	200988	306000	105012
Q105	C-5	CANADIAN RUBBER C	RUBBER COMPANY	162	400000	STEAM	210	370	70245	301513	431415	129902
NB185	E-1	CARMAN & SMITH	SAW MILL	251	30000	STEAM	60	70	20000	160000	225000	65000
Q104	B	CARPENTER A T	VICTORIA STRAW W	249-H	200000	STEAM	20	177	42500	200000	360000	160000
Q106	C-3	CHANTALOUP ERNEST	BRASS FNDRY/LAMP	297/309	50000	STEAM	10	171	60000	20000	100000	80000
O047	A-1	CHILDS & HAMILTO	BOOT/SHOE FACTOR	174	40000		.	192	65000	85000	160000	75000
O042	H	CHRISTIE A R	SAW MILL	251	100000	WATER	250	87	25000	40000	85000	45000
Q106	A-1	CLENDENING WILLIA	FOUNDRY	307-S/315	40000	STEAM	20	150	50000	60000	130000	70000
O047	A-3	CONSUMERS GAS CO	GAS WORKS	574	400000	STEAM	10	51	19000	33000	124000	91000
Q104	A-2	CORISTINE JAMES &	HAT/MITT/MOCCASI	246/175	200000	STEAM	14	315	26000	125000	350000	225000
NB174	J-1	CORKING ANDRE & C	SAW MILL	251	50000	STEAM	150	225	75000	84000	180000	96000
O079	B	COSSITT & BRO	FOUNDRY/AGRC IMP	311/315	50000	WATER	60	65	25000	27700	107000	79300
O031	F	CROMBIE JAMES	WOOLEN FACTORY	182	60000	WATER	6	67	12000	75000	120000	45000
O077	C-1	CURRIER T M & CO	SASH/BLIND/DOOR	254	35000	STEAM	50	70	32000	50000	85000	35000
NS197	A-1	DARTMOUTH ROPE WA	ROPE WALK	184	80000	STEAM	80	75	15000	80000	120000	40000
O046	C-1	DICKEY NEILL & CO	ENGINES/FOUNDRY	315-E/326	120000	STEAM	50	230	80000	112900	275600	162700
Q104	A-2	DONOVAN & WILLIAM	BOOT/SHOEMAKER	174	100000	STEAM	16	292	75000	220000	400000	180000
Q106	A-1	DOW WILLIAM & CO	BREWERY/DISTILLE	109-B/109-D	160000	STEAM	35	90	32000	120000	280000	160000
Q145	A-1	DRUM WILLIAM	CABINET/CHAIR FC	261	150000	STEAM	100	120	32000	100000	160000	60000
O013	F-2	EASTWOOD & CO	AGRC IMPLEMENT M	311/315	30000	STEAM	16	70	28000	51860	101000	49140
Q093	B-4	EDDY EZRA BUTLER	SAW M/MATCH/PAIL	251/254	250000	WATER	600	760	144000	400000	661000	261000
NB174	D-1	FRANCIS M & SONS	BOOT/SHOE MF	174	30000		.	147	29000	78500	120000	41500
O054	B-3	FRASER & CO	WOOLEN MILL	182	60000	W/S	80	112	25000	72000	120000	48000
O048	E-2	GIBBS WM H	CABINET FACTORY	261	60000	STEAM	50	181	55000	100000	165000	65000
NB179	Q-1	GIBSON ALEXANDER	SAW MILL	251	35000	WATER	125	106	26000	90000	144000	54000
Q106	A-9	GILBERT E E	ENGINE/MACHINE W	315-E/315	35000	STEAM	40	145	50000	46500	120000	73500
Q093	B-2	GILMORE & CO	SAW MILL	251	250000	WATER	470	302	52000	225000	320000	95000
O060	B	GILMOUR & CO	SAW MILL	251	60000	STEAM	110	170	36000	154000	220000	66000
Q153	G-1	GILMOUR ALLAN & C	ESTACADES/NAVIRE	031/327	30000		.	100	25000	750000	800000	50000
NB174	J-1	GODARD JOHN	SAW MILL	251	40000	STEAM	100	80	18000	80000	130000	50000

CANADA: TOP ONE PER CENT FIRMS BY PROPRIETOR, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
0031	D-3	GOLDIE/MCCULLOCH/	ENGINE/MACHINE W	315-E/315	100000	STEAM	50	203	65000	27700	180000	152300
0047	A-3	GOODERHAM & WORTS	DISTILLERY	109-D	350000	STEAM	116	150	60000	450000	1470000	1020000
0021	A-3	GORDON & MACKAY	LYBSTER COTTON M	181	150000	WATER	250	200	36000	66000	150000	84000
0015	D-1	GRAND TRUNK RAILW	REPAIR SHOP	326	435000	STEAM	30	315	182000	82000	326000	244000
Q106	A-11	GRAND TRUNK RAILW	RLWY CARS/ENGINE	326	270000	STEAM	185	790	250000	500000	750000	250000
Q104	A-2	GREEN & SONS	FURRIER/HATTER	246	250000		.	180	60000	300000	450000	150000
0033	C-3	GUELPH SEWING M C	SEWING MACHINE F	315-S	65000	STEAM	12	180	75000	62000	204800	142800
0047	A-4	GZOWSKI C & CO	ROLLING MILL	291-R	100000	STEAM	250	200	72000	387000	500000	113000
0039	E-2	HAGGERT BROS	FOUNDRY/AGRC IMP	311/307-S	30000	STEAM	20	93	31500	50500	103500	53000
Q144	F-1	HALL G B	SCIE, ML	251	105000	WATER	350	526	84900	391420	700000	308580
0075	C	HAMILTON BROS	SAW MILL	251	100000	WATER	1500	168	27000	400000	540000	140000
0024	B-3	HAMILTON ROLLING	ROLLING MILLS	291-R	70000	STEAM	400	225	80000	410000	680000	270000
0047	A-3	HAMILTON WILLIAM	FOUNDRY/MACHINE	315/326	100000	STEAM	60	200	100000	35000	620000	585000
NB174	K-2	HARRIS JAMES & CO	IRON FOUNDRY	327/315-E	40000	STEAM	30	134	40200	36000	92000	56000
0046	A-1	HAY R & CO	CABINETS/UPHOLST	261	400000	STEAM	40	430	120000	350000	500000	150000
0046	A-1	HENDERSON & BOSTW	HAT/BONNET MF	249-H	50000	STEAM	15	201	14400	24700	80000	55300
0042	B	HOTCHKISS & PECKH	SAW MILL	251	30000	STEAM	150	133	26000	54000	120000	66000
0042	H	HOTCHKISS/HEWSON	SAW MILL	251	75000	WATER	250	82	25000	40000	85000	45000
0046	B-1	HUNTER ROSE & CO	PRINTER/BINDERY	286/287-B	40000	STEAM	25	173	48000	50000	160000	110000
Q128	B-1	HUNTERSTOWN LUMBE	SCIE, ML	251	150000	STEAM	200	350	47136	72000	125000	53000
Q106	A-2	IVES & ALLAN	FOUNDRY	294	60000	STEAM	45	230	55000	40000	200000	160000
NB174	K-1	JEWETT BROS	SAW MILL	251	40000	STEAM	.	102	25000	40000	80000	40000
0048	E-2	JOSEPH HALL MFG C	ENGINES/AGRC IMP	315-E/311	200000	STEAM	50	266	125000	56600	300000	243400
Q106	A-3	LAWLOR J D	SEWING MACHINE M	315-S	59000	STEAM	4	51	25000	12500	112500	100000
Q094	B	LIMOYNE & GIBB &	SAW MILL	251	90000	WATER	150	53	30000	90000	160000	70000
Q104	A-2	LINTON & COOPER	BOOT/SHOEMAKER	174	100000	STEAM	18	148	32000	90000	160000	70000
Q138	H	LOGAN ANGUS & CO	PAPER FACTORY	271	110000	W/S	100	94	31265	58099	154796	96697
Q104	A-2	LOVELL JOHN	PRINTING/BINDERY	286/287-B	80000	STEAM	6	147	40900	30000	100000	70000
Q135	A	MAYRAND ANTOINE	SCIE, ML	251/251-S	40000	STEAM	65	150	25000	80000	144000	64000
0050	B-1	MCARTHUR F F	FURNITURE MF CO	261	50000	STEAM	40	175	58000	50000	135000	85000
0010	C-1	MCCLARY J & O	FOUNDRY	307-S/311	50000	STEAM	25	73	30000	60000	100000	40000
Q104	A-2	MCCREADY I & R &	BOOT/SHOE FACTOR	174	150000	STEAM	12	128	50000	60000	250000	190000
Q105	B-1	MCDONALD W C	TOBACCO WORKS	153	50000	STEAM	25	550	82000	263000	520000	257000
0054	A-1	MCDOUGALL & LUDGA	SAW MILL	251	152960	STEAM	100	225	52800	67500	135000	67500
Q106	A-9	MCDOUGALL JOHN	FOUNDRY/MILLWRIG	315/315-E	30000	WATER	25	140	60000	37000	104000	67000
Q106	A-9	MCDOUGALL JOHN &	RLWY CAR WHEEL F	326	50000	STEAM	15	60	36000	85000	144000	59000
0077	E-2	MCLAREN J & CO	SAW MILL	251	40000	WATER	100	53	18000	80000	150000	70000
Q094	B	MCLAREN JAS & CO	SAW MILL	251	72000	WATER	500	106	15000	80000	160000	80000
Q105	C-6	MCMULLEN & ADAMS	TABAC, MF	153	150000	STEAM	100	400	75000	160000	500000	340000
0024	E-2	MCPHERSON JOHN &	BOOT/SHOE MF	174	70000	STEAM	25	175	50000	120000	200000	80000
Q104	A-1	MITCHELL ROBERT &	BRASS/COPPER FOU	297	44300	STEAM	10	120	36100	37590	81677	44087
Q107	A-2	MNTRL ROLLING MIL	ROLLING MILL	291-R	200000	STEAM	200	262	65000	200000	400000	200000
Q105	C-5	MOLSON J H R & BR	SUGAR REFINERY	108-R	120000	STEAM	60	119	36800	1162000	1288750	126750
Q105	C-5	MOLSON J H R & BR	BREWERY	109-B	80000	STEAM	7	65	19200	74200	175000	100800
NS196	A-1	MONTGOMERY WILLIA	MACHINE SHOP/FOU	315-E/315	55480	STEAM	30	63	21181	15540	125000	109460
0010	C-1	MOORHEAD GEORGE	CABINET MANUFACT	261	100000	STEAM	10	68	30000	40000	150000	110000
NB179	E	MORRISON JOHN A	SAW MILL	251	40000	STEAM	100	102	23000	82500	121500	39000
Q107	A-2	MOSELEY & RICKER	LEATHER MANUFACT	172	150000	STEAM	20	80	28000	87000	160000	73000
Q104	A-1	MULLARKY MICHAEL	BOOT/SHOEMAKER	174	31000		.	290	67000	160000	312000	152000
Q106	A-3	NEW CITY GAS CO	GAS FACTORY	574	600000		.	72	28000	9000	215000	206000
0013	F-2	NOXON BROS	FOUNDRY	311/315	70000	STEAM	60	103	42000	50500	111400	60900

CANADA: TOP ONE PER CENT FIRMS BY PROPRIETOR, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
NB174	K-1	PARKS W & SON	COTTON FACTORY	181	100000	STEAM	80	101	19000	84000	130000	46000
Q140	A-1	PATON MF CO	WOOLEN FACTORY	182	133000	WATER	150	194	45000	156250	250000	93750
O044	B-2	PATTERSON BROS	AGRC MACHINE WOR	311	50000	W/S	30	125	50000	30650	113630	82980
Q106	A-9	PECK BENNY & CO	NAIL/SPIKE FACTO	305-N	80000	WATER	70	108	30000	116000	170000	54000
O077	B-2	PERLEY & PATTEE	SAW MILL	251	150000	WATER	500	250	70000	240000	330000	90000
Q106	A-9	PILLOW HERSEY & C	NAIL MANUFACTURE	305-N	75000	WATER	100	155	45000	144600	225000	80400
Q104	A-2	POPHAM JAMES & CO	BOOT/SHOE FACTOR	174	65000	STEAM	12	125	30000	70000	135000	65000
Q133	C-1	PRICE BROS & CO	SAW MILLS	251	100000	WATER	100	200	40000	40000	80000	40000
O031	G	RANDALL & FARR &	WORSTED/WOOLEN M	182/239	77000	WATER	100	163	35000	140000	200000	60000
O061	B-1	RATHBUN H B & S	SAW MILL	251	50000	STEAM	150	311	39250	77900	140754	62854
Q106	A-9	REDPATH JOHN & SO	SUGAR REFINERY	108-R	240000	STEAM	110	220	71000	2400000	2620000	220000
Q146	C-2	RENFREW & MARCOU	FURRIER MANUFACT	246	100000		.	65	13000	200000	300000	100000
Q132	D	RICHARDSON & SONS	TANNERIE	172	145000	WATER	50	56	11760	85000	170000	85000
O021	A-3	RIORDAN JOHN	PAPER MILLS	271	156000	WATER	200	100	30000	70000	160000	90000
O046	A-1	ROBERTSON & COOK	PRINTING OFFICE	289	50000	STEAM	10	95	70000	100000	200000	100000
Q145	D	ROCHE JOHN	BLACKSMITH	327-M	90000	STEAM	100	92	32000	35000	80000	45000
Q104	B	ROLLAND G S	BOOT/SHOE MF	174	80000	STEAM	10	350	60000	125000	250000	125000
Q106	A-1	RONAYNE M & CO	BOOT/SHOEMAKER	174	29000		.	115	60000	50000	180000	130000
O080	B	ROSAMOND B & W &	WOOLEN FACTORY	182	200000	WATER	160	209	48600	270000	350000	80000
O024	E-2	SANFORD & MCINNES	CLOTHING MF	242	40000		.	455	60000	250000	350000	100000
O007	F	SCOON J A	STRATHROY WOOLEN	182	46000	STEAM	35	57	13000	54000	90000	36000
Q134	D-1	SENECAL L A & CO	SCIE, ML	251	130000	STEAM	80	145	50000	90000	150000	60000
O046	A-1	SESSIONS/TURNER/C	BOOTS/SHOE MF	174	30000	STEAM	15	510	100000	180000	300000	120000
Q104	A-1	SHOREY & CO	CLOTHING MF	243	30000		.	300	24000	112500	153800	41300
O068	B	SMART JAMES	FOUNDRY	309/307-S	32000	STEAM	32	160	45000	50000	140000	90000
Q104	A-1	SMITH COCHRANE &	BOOT/SHOE MF	174	50000	STEAM	12	350	90000	225000	410000	185000
Q107	A-2	ST LAWRENCE GLASS	FLINT GLASS MF	356	50000	STEAM	20	117	35000	20000	100000	80000
Q131	C	ST MAURICE LUMBER	SCIE, ML	251	400000	STEAM	190	250	20000	100000	182000	82000
NS197	A-2	STARR MF CO LIMIT	SKATE MF	393-S	45000	WATER	60	73	30000	35000	90000	55000
NB174	J-2	SUTTON E & CO	SAW MILLS	251	55000	WATER	110	110	20000	105000	140000	35000
O077	C-1	TAYLOR ISAAC B	PRINTING EST	289	50000	STEAM	25	140	50000	40000	113397	73397
O047	A-1	THE GLOBE	PUBLISHING OFFIC	289	60000		.	80	70000	110000	220000	110000
O021	B-1	TUTTLE DATE & ROD	AGRC HAND TOOLS	306	75000	WATER	350	120	55000	36000	137000	101000
Q104	C-2	VALOIS A & CO	CHAUSSURES, MF	174	40000	STEAM	10	275	54000	215000	295000	80000
NB174	D-1	VALPY JOSEPH	BOOT/SHOE MF	174	30000	STEAM	5	127	32000	90000	150000	60000
O001	J-2	WALKER HIRAM	DISTILLER/MALSTE	109-D	47200	STEAM	45	106	45700	240000	1114982	874982
O024	E-2	WANZER R M & C	SEWING MACHINE M	315-S	58000	STEAM	40	275	86000	65000	210000	145000
O073	D-1	WARWICK JOHN	WOOLEN FACTORY	182	100000	WATER	100	145	18000	110000	200000	90000
O015	D-2	WATEROUS C H & C	ENGINES/MACHINER	315-E/315	57000	STEAM	40	118	40573	19700	120000	100300
O048	D-1	WHITING & COWAN	SCYTHES/HOES/FOR	306	40000	WATER	70	52	28400	41250	100000	58750
Q118	F	WILLETT SAMUEL	FLANELLES, MF	182	50000	WATER	60	54	12000	49000	95000	46000
O046	D-3	WILLIAM R S	MELODEON EST	399-P	30000	STEAM	20	60	30000	35000	80000	45000
Q106	A-9	WOOD PETER W	COTTON MILL	181	50000	WATER	75	94	19500	77000	129000	52000
Q147	A-1	WOODLEY S	CHAUSSURES, MF	174	50000	STEAM	12	430	165000	200000	600000	400000
Q146	D-1	WOODLEY SAMUEL	CHAUSSURES, MF	174	50000	STEAM	20	650	104000	440000	600000	160000
Q093	B-3	WRIGHT & BATSON &	LUMBERING	251	198000	STEAM	80	540	60000	80000	160000	80000
O077	B-2	YOUNG LEVI	SAW MILL	251	100000	WATER	100	100	20000	150000	182000	32000
O023	C-2	YOUNG & LAW & CO	COTTON FACTORY	181	250000	W/S	90	143	29500	110000	200000	90000
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					16673440		16870	27710	7236710	21175190	38561996	17386806

Appendix A-9 MONTREAL: INDUSTRIAL STRUCTURE OF ALL FIRMS, 1871

	OBSERV		FORCE		FIXCAP		TOTEMP		SUMPROC		VADD	
	SUM	PERC-ENT	SUM	PERC-ENT	SUM	PERC-ENT	SUM	PERC-ENT	SUM	PERC-ENT	SUM	PERC-ENT
SEC												
5.01	102	8.9	809	19.1	1840113	15.7	1233	5.6	8922686	26.1	1659807	11.7
5.02	17	1.5	148	3.5	289520	2.5	1109	5.0	1245206	3.6	716621	5.1
5.03	1	0.1	210	5.0	400000	3.4	370	1.7	431415	1.3	129902	0.9
5.04	162	14.1	488	11.5	1642028	14.0	5638	25.4	6594420	19.3	3256817	23.0
5.05	16	1.4	125	2.9	140400	1.2	215	1.0	222690	0.7	103206	0.7
5.07	243	21.1	74	1.7	1728461	14.8	3991	18.0	4583802	13.4	2007737	14.2
5.08	103	9.0	460	10.8	437633	3.7	1189	5.4	2174688	6.4	874181	6.2
5.09	50	4.3	91	2.1	263051	2.3	516	2.3	515625	1.5	310938	2.2
5.1	5	0.4	29	0.7	61900	0.5	188	0.8	141620	0.4	51748	0.4
5.11	47	4.1	105	2.5	760455	6.5	1049	4.7	872940	2.6	568820	4.0
5.12	11	1.0	192	4.5	391167	3.3	779	3.5	683994	2.0	431229	3.0
5.13	90	7.8	535	12.6	671569	5.7	1298	5.9	1850178	5.4	865952	6.1
5.14	29	2.5	366	8.6	636540	5.4	1022	4.6	983525	2.9	715254	5.0
5.15	44	3.8	380	9.0	658742	5.6	1329	6.0	1343867	3.9	593764	4.2
5.17	22	1.9	126	3.0	138195	1.2	531	2.4	502400	1.5	253290	1.8
5.19	39	3.4	61	1.4	481450	4.1	301	1.4	1326752	3.9	438097	3.1
5.2	63	5.5	37	0.9	288206	2.5	483	2.2	549690	1.6	351761	2.5
6	47	4.1	.	.	91770	0.8	615	2.8	786286	2.3	470711	3.3
7	2	0.2	.	.	610000	5.2	72	0.3	215000	0.6	206000	1.5
8	6	0.5	.	.	8536	0.1	13	0.1	8200	0.0	6820	0.0
10	51	4.4	6	0.1	150606	1.3	223	1.0	214507	0.6	170204	1.2
ALL	1150	100.0	4242	100.0	11690342	100.0	22164	100.0	34169491	100.0	14182859	100.0

Appendix A-10 TORONTO: INDUSTRIAL STRUCTURE OF ALL FIRMS, 1871

	OBSERV		FORCE		FIXCAP		TOTEMP		SUMPROC		VADD	
	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT	SUM	PERCENT
SEC												
5.01	75	13.3	607	24.3	905070	8.2	690	6.5	4440570	28.8	2138323	27.9
5.02	9	1.6	36	1.4	62600	0.6	364	3.4	340860	2.2	123482	1.6
5.04	68	12.0	36	1.4	257325	2.3	1708	16.1	1823941	11.8	708475	9.3
5.05	6	1.1	7	0.3	2720	0.0	24	0.2	15750	0.1	8510	0.1
5.06	1	0.2	20	0.8	10000	0.1	77	0.7	50000	0.3	29000	0.4
5.07	92	16.3	23	0.9	329525	3.0	2077	19.6	1799137	11.7	821526	10.7
5.08	41	7.3	505	20.2	150495	1.4	839	7.9	670832	4.4	293757	3.8
5.09	15	2.7	46	1.8	427300	3.9	532	5.0	615862	4.0	209406	2.7
5.1	6	1.1	61	2.4	22100	0.2	76	0.7	171700	1.1	91850	1.2
5.11	22	3.9	84	3.4	398940	3.6	878	8.3	1371055	8.9	716727	9.4
5.12	3	0.5	262	10.5	102300	0.9	210	2.0	507650	3.3	117550	1.5
5.13	57	10.1	213	8.5	270350	2.5	766	7.2	961637	6.2	666121	8.7
5.14	11	1.9	234	9.4	415000	3.8	566	5.3	1085350	7.0	896670	11.7
5.15	23	4.1	179	7.2	6649050	60.3	768	7.3	176500	1.1	106980	1.4
5.17	18	3.2	26	1.0	44700	0.4	193	1.8	154684	1.0	99328	1.3
5.18	2	0.4	12	0.5	2950	0.0	8	0.1	24250	0.2	16000	0.2
5.19	10	1.8	79	3.2	68400	0.6	103	1.0	349466	2.3	94295	1.2
5.2	49	8.7	52	2.1	158500	1.4	366	3.5	446884	2.9	281884	3.7
6	26	4.6	7	0.3	18760	0.2	206	1.9	170125	1.1	109591	1.4
7	2	0.4	10	0.4	700000	6.4	61	0.6	169000	1.1	91000	1.2
8	4	0.7	.	.	4875	0.0	15	0.1	14400	0.1	5845	0.1
10	25	4.4	.	.	16830	0.2	58	0.5	45560	0.3	31750	0.4
ALL	565	100.0	2499	100.0	11017790	100.0	10585	100.0	15405213	100.0	7658070	100.0

Appendix A-11 QUEBEC CITY: INDUSTRIAL STRUCTURE OF ALL FIRMS, 1871

	OBSERV		FORCE		FIXCAP		TOTEMP		SUMPROC		VADD	
	SUM	PERC-ENT	SUM	PERC-ENT	SUM	PERC-ENT	SUM	PERC-ENT	SUM	PERC-ENT	SUM	PERC-ENT
SEC												
5.01	51	10.1	31	3.9	501730	18.7	325	5.4	1230706	17.0	406336	13.1
5.02	5	1.0	35	4.4	42500	1.6	65	1.1	171000	2.4	46200	1.5
5.03	1	0.2	75	9.4	50000	1.9	124	2.1	59200	0.8	15411	0.5
5.04	107	21.2	86	10.7	320904	12.0	2264	37.9	2662925	36.9	1006592	32.5
5.05	5	1.0	6	0.7	60500	2.3	49	0.8	94500	1.3	46500	1.5
5.07	92	18.3	.	.	181619	6.8	553	9.3	736778	10.2	235764	7.6
5.08	42	8.3	257	32.0	214590	8.0	398	6.7	336821	4.7	176470	5.7
5.09	23	4.6	135	16.8	292254	10.9	306	5.1	301540	4.2	153906	5.0
5.11	25	5.0	24	3.0	296500	11.1	362	6.1	267178	3.7	177180	5.7
5.12	1	0.2	.	.	1200	0.0	6	0.1	1600	0.0	1520	0.0
5.13	46	9.1	62	7.7	127847	4.8	237	4.0	280382	3.9	178165	5.8
5.14	5	1.0	32	4.0	34300	1.3	104	1.7	92000	1.3	77360	2.5
5.15	36	7.1	20	2.5	129875	4.8	821	13.8	508382	7.0	322255	10.4
5.17	3	0.6	16	2.0	15800	0.6	28	0.5	35000	0.5	8000	0.3
5.19	8	1.6	15	1.9	50136	1.9	38	0.6	147500	2.0	47100	1.5
5.2	17	3.4	.	.	55611	2.1	58	1.0	45000	0.6	22751	0.7
6	18	3.6	.	.	17420	0.6	170	2.8	147768	2.0	89828	2.9
7	1	0.2	8	1.0	270000	10.1	30	0.5	82000	1.1	67000	2.2
8	1	0.2	.	.	200	0.0	1	0.0	1600	0.0	784	0.0
10	17	3.4	.	.	19685	0.7	31	0.5	23573	0.3	16111	0.5
ALL	504	100.0	802	100.0	2682671	100.0	5970	100.0	7225453	100.0	3095233	100.0

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